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CCCLXIII.—The Atomic Weights of Carbon and Silver. By George Dean 2656

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NOTES.—The Behaviour of the Simple Halides with Water. By NEVIL VINCENT SIDGWICK 2672

The Influence of Nitrogen Dilution on the Speed of Flame. By OLIVER COLIGNY DE CHAMPFLEUR ELLIS . . 2674

A Trustworthy Shaking Machine. By ARTHUR GEORGE MILLIGAN 2674

The Orientation of Derivatives of Triphenylphosphine Oxide. By FREDERICK CHALLENGER and JOHN FREDERICK WILKINSON 2675

Spontaneous Combustion of Ethylene during the Preparation of Ethylene Dichloride. By RAM KRISHEN SHARMA 2676

OBITUARY NOTICES 2677

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 17th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
George Henry Beckett	April 2nd, 1874.	Nov. 2nd, 1923.
Frederick John Bloomer	Feb. 19th, 1891.	Dec. 21st, 1923.
Douglas Herman	Feb. 16th, 1871.	Jan. 1st, 1924.
Austin Keen	Dec. 7th, 1882.	Jan. 20th, 1922.
Herbert James Ling	June 15th, 1911.	
Dudley Cloete Vining	June 19th, 1919.	Jan. 8th, 1924.

The PRESIDENT announced:

(1) That the names of the Members of Council who retire at the Annual General Meeting on the 27th March, 1924, and who are ineligible for re-election to the same office until the lapse of one year, are as follows:

Secretary:
Professor J. C. Philip.

Vice-Presidents who have filled the office of President:
Dr. Alexander Scott, Sir William A. Tilden.

Vice-Presidents who have not filled the office of President:
Professor F. Gowland Hopkins, Professor T. M. Lowry.

Ordinary Members of Council:

(*a*) Town Members:
Professor J. S. S. Brame, Mr. E. V. Evans, Dr. T. Slater Price.

(*b*) Country Members:
Professor C. H. Desch, Mr. H. B. Hartley, Dr. N. V. Sidgwick.

(2) That the following vacant places accordingly fall due to be filled at the Annual General Meeting on March 27th, 1924:

Secretary	One vacancy.
Vice-Presidents who have filled the office of President	Two vacancies.
Vice-Presidents who have not filled the office of President	Two vacancies.

Ordinary Members of Council:

(*a*) Town Members (*i.e.*, those living within a radius of 50 miles from London) ...	Three vacancies.
(*b*) Country Members (*i.e.*, those living beyond a radius of 50 miles from London)...	Three vacancies.

(3) That the Council had nominated Professor C. S. Gibson to the office of Secretary.

The following were formally admitted Fellows of the Chemical Society: D. Arkell, R. H. Atkinson, and D. Powell.

Certificates were read for the first time in favour of:

William Richardson Anderson, B.Sc., 3, Derwentwater Terrace, South Shields.
Charles Edward Baldwin, B.A., A.I.C., Dunloe, Temple Ewell, Dover.
Richard Byron Duerden, B.Sc., A.I.C., 6, Langholme Road, Nelson.
Frederick Basil Garner, B.Sc., A.I.C., 10, Richmond Road, Wimbledon, S.W. 20.
Hugh Harper, B.Sc., c/o Anglo-Persian Oil Co., Ltd., Abadan, Persian Gulf.
Frank Hindle, Sewage Works, Common Bank, Chorley.
Ralph Percival Hobson, B.Sc., Rothamsted Experimental Station, Harpenden.
Harry Raymond Ing, B.A., 184, Divinity Road, Oxford.
Frederick Charles Lay, B.A., University Settlement, Nile Street, Liverpool.
Fred Mattingley, B.Sc., A.I.C., 3, Frankfurt Road, Herne Hill, S.E. 24.
Edward Tom Neathercoat, C.B.E., J.P., The Elms, Weybridge, Surrey.
Thomas Richard Owles, 9, Bassett Road, W. 10.
Edward Samson, 1, Branksome Wood Road, Bournemouth.
Reginald Bernard Warne, 98, Argyle Road, West Ealing, W. 13.
George Crone Westgarth, B.Sc., Wolsingham, Co. Durham.
William Arthur Whiting, 9, Kensington Avenue, Watford.

The following Certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2):

John Laurence Miles, 35, Meriam Street, Lexington, Mass., U.S.A.

The following papers were read:

"A suggested explanation of the allotropic transformations of iron." By R. H. Atkinson.

"The activity of water in aqueous hydrochloric acid." By H. J. E. Dobson and I. Masson.

"The vapour pressure of hydrochloric acid." By J. S. Dunn and E. K. Rideal.

"The freezing of inorganic hydrogels." By J. R. I. Hepburn.

HUGO MÜLLER LECTURE.

The Hugo Müller Lecture will be delivered by Professor J. Joly, M.A., F.R.S., on Thursday, February 28th, 1924, at 8 p.m., in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

List of Papers received between December 21st, 1923, and January 17th, 1924. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Reduction products of the hydroxy-anthraquinones. Part V." By F. L. Goodall and A. G. Perkin.

"The action of diacetyl tartaric anhydride and chlorofumaryl chloride upon aromatic amines and hydrazines." By F. D. Chattaway and G. D. Parkes.

"Studies in fluorescence spectra. Part II. Some phenols and phenolic ether vapours." By J. K. Marsh.

"Stereoisomeric semicarbazones." By F. J. Wilson and R. M. Macaulay.

"The absorption spectra of some derivatives of phenol and other substances." By J. E. Purvis.

"Studies in the anthracene series. Part VIII." By E. de B. Barnett and M. A. Matthews.

"Volume alterations on solution." By F. L. Teed.

"The activity of hydrogen-ion in aqueous solutions of hydrofluoric acid." By W. F. K. W. Jones and L. J. Hudleston.

"A simple method for determining the approximate index of refraction of liquids with a common microscope." By C. C. Kiplinger.

"The polysulphides of carbethoxide thioncarbethoxide and dithiocarbethoxide." By D. Twiss.

"Depolymerisation of diglycerine." By E. Lewis.

"The periodic dissolution of metals in certain reagents." By E. S. Hedges and J. E. Myers.

"The correction of the specific gravity of liquids for the buoyancy of air." By G. Barr.

"Note on the action of potassium hydroxide on nitric oxide." By G. BARR.

"Note on the preparation of 3 : 3′-dinitrobenzophenone." By E. DE B. BARNETT and M. A. MATTHEWS.

"Studies in the anthracene series. Part IX." By E. DE B. BARNETT and J. W. COOK.

"Note on the interpretation of surface energy data." By G. M. BENNETT.

"Constitutional studies in the monocarboxylic acids derived from sugars. Part II. The methylation of tetramethyl gluconic acid." By J. PRYDE.

"Electrical conductivities of mixtures of aniline, acetic acid and water." By J. R. POUND.

"The oxidation of 2-thiol-4 : 5-diphenylglyoxaline." By I. D. LAMB and F. L. PYMAN.

"The hydroferrocyanides and hydroferricyanides of the organic bases. Part III." By W. M. CUMMING.

"The solubility of the aminophenols." By N. V. SIDGWICK and R. K. CALLOW.

"Abnormal benzene derivatives." By N. V. SIDGWICK and R. K. CALLOW.

"The rotatory dispersive power of organic compounds. Part XI. Octyl alcohol and octyl oxalate." By T. M. LOWRY and E. M. RICHARDS.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 21ST, 1924.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

ANDERSON, WILLIAM RICHARDSON, B.Sc., 3, Derwentwater Terrace, South Shields. British. Student Demonstrator in Chemistry. B.Sc. (2nd Class Hons. Chemistry), Dunelm (1922); 2 years training in laboratories of Messrs. Palmer's Shipbuilding and Iron Co., Jarrow (Analytical Chemistry) (1916-1918). Since 1922, Research under Prof. W. N. Haworth. (*Signed by*) W. N. Haworth, G. C. Leitch, J. A. Smythe.

ATKINSON, REGINALD GRAHAM, 35, Heathdene Rd., Streatham, S.W. 16. British. Research Student (Organic Chemistry). Associate of the Royal College of Science (A.R.C.S.). Three year course at the Royal College of Science. (*Signed by*) C. K. Ingold, M. A. Whiteley, G. A. R. Kon, Arnold Stevenson.

BALDWIN, CHARLES EDWARD, "Dunloe," Temple Ewell, near Dover. British. Senior Science Master at Gainsborough Grammar School. B.A.

Oxon. (Hons. Chemistry). Associate of Institute of Chemistry. Trained and registered teacher, etc. Teacher of and lecturer in Chemistry. (*Signed by*) F. D. Chattaway, Herbert B. Hammond, G. Devenish Thomas.

Bishop, Wilfrid Barnard S., B.Sc., "Tamar," Miller Street, Petersham, N.S.W. Australia. Demonstrator, Department of Chemistry, The University of Sydney, N.S.W. Author of (i) "The Preparation of Ethyl Formate by the Interaction of Oxalic Acid, Glycerol, and Ethyl Alcohol Vapour," read before Soc. Chem. Industry, N.S.W. Section, May 1923. (ii) "Ethyl Ether —Quantitative Results by Williamson's Synthesis, with note on Purification." For reading, Chem. Soc. Industry, N.S.W. Section, October 15, inst. (*Signed by*) Charles E. Fawsitt, J. A. Schofield, J. C. Earl, G. J. Burrows, Henry G. Smith, George Harker.

Browne, Thomas Ethelred Wilby, 26, York St., Norwich, Norfolk. British. Science Master (Chemistry and Agriculture), Lucton School, Kingsland, Herefordshire. Bachelor of Science of University of Wales in Chemistry and Agriculture, July 1922. (*Signed by*) Kennedy Orton, G. W. Robinson, F. G. Soper.

Butler, Francis Herbert Culverhouse, South End, St. Cross, Winchester, Hants. British. Lecturer on Chemistry, Winchester Training College. B.A. (Hons.) Cambridge; Part II, Natural Sciences Tripos. Associate of the Institute of Chemistry. Demonstrator in Chemistry under Dr. H. J. H. Fenton, M.A., Sc.D., F.R.S., F.I.C., F.C.S., in the University Chemical Laboratory, Cambridge, 1921–1922. At present engaged in lecturing on Chemistry and carrying out research in Physical Chemistry. (*Signed by*) H. J. H. Fenton, Eric K. Rideal, W. G. Palmer.

Channon, Harold John, 28, Glenhouse Road, Eltham, London, S.E. 9. British. Research Assistant, Department of Biochemistry, University College, London, W.C. 1. *Degrees:* B.A., London, 1919. B.Sc. (Chem. Hons.), London, 1922. Engaged on research in biochemistry since 1922 with Professor J. C. Drummond, University College, London. Demonstrator, Biochemistry, University College, London, 1922–3. Research Assistant, Biochemistry, University College, London, 1923–. (*Signed by*) F. G. Donnan, W. E. Garner, J. C. Drummond.

Clendinnen, Frederick William Jeffrey, Carlton Brewery, Melbourne, Australia. Chemist, Carlton and United Breweries. First Class Final Honours Chemistry M.Sc. (Melb.). Published Papers: (1) "The Ternary System Ammonium Chloride–Manganous Chloride–Water" (Clendinnen and Rivett, T., 1921, **119**, 1329). (2) "Mixed Crystal Formation in Ternary Systems Containing Water, Ammonium Chloride, and Ferrous, Cobaltous, or Nickel Chloride" (Clendinnen, T., 1922, **121**, 801). (3) "The Ternary System Ammonium Chloride–Ferric Chloride–Water" (T., 1923, **123**, 1338). (4) "A Critical Solution Temperature for Solids in the Binary System Ammonium Chloride–Manganous Chloride Dihydrate" (Clendinnen and Rivett, T., 1923, **123**, 1344). (5) "Mixed Crystals and Double Salts, etc." (Rivett and Clendinnen, T., 1923, **123**, 1634). (*Signed by*) Orme Masson, A. C. D. Rivett, E. J. Hartung.

Cluer, Alan Rowland, 36, Dunmore Road, Wimbledon, S.W. 20. British. Research Student. A.R.C.S. (2nd Class). B.Sc. (Hons. 2nd Class). (*Signed by*) M. A. Whiteley, G. A. R. Kon, Arnold Stevenson, C. K. Ingold.

Crosley, George Duncan, 134, Cranbrook Rd., Ilford, Essex. British. Schoolmaster (responsible for the organisation of science teaching in the school). Higher School certif., London University Matric. School certif. (Northern Universities). I take a very great interest in Chemistry and I

intend to complete my B.Sc. with Honours in Chemistry in the near future and to teach Chemistry only. (*Signed by*) E. D. Griffiths, Geoffrey Middleton, G. P. Trasler.

CROWLE, REGINALD STANLEY, 38, Devonshire Rd., Millom, Cumberland. Chief Analyst to the Millom and Askam Hematite Iron Co. Ltd. Chief analyst (as above) (after being 10 years chief assistant). Past student at the Imperial Institute of Science and Technology, London. Holder of Stage 1, 2, and 3 certificates in both Theoretical and Practical Chemistry under the Board of Education, South Kensington, London. Teacher of both Theoretical and Practical Chemistry at evening classes, under local education authorities. (*Signed by*) T. Greetham, Alex. W. McLaren, Alfred R. Campbell, R. T. Thomson.

CUMMING, WILLIAM MURDOCH, 31, Mossgiel Road, Newlands, Glasgow. British. Lecturer on Organic Chemistry, The Royal Technical College, Glasgow. B.Sc., F.I.C. Papers in *J. Soc. Chem. Industry* (two), 1921, **41**, 20; 1922, **42**, 166. Papers in *J. Chemical Society* (three), 1922, **121**, 1287; 1923, **123**, 2457; 1923, 123, 2465. "Systematic Organic Chemistry," Cumming, Hopper, and Wheeler (Constable & Co.). (*Signed by*) Thomas Gray, F. J. Wilson, T. S. Patterson, R. M. Caven, G. G. Henderson.

CURSEDJI, TALATI DADABHAI, L.M.S., B.Hy. (Bombay), D.T.M. (Liverpool), D.P.H. (Cantab.), M.R.San.I. (England). Baroda, India. Parsee. Sanitary Commissioner, Baroda State, and Municipal Commissioner, Baroda City, being the officer in charge of the Municipal Chemical and Bacteriological laboratories, also as the Sanitary Commissioner he has to inspect chemical works, dyeing factories, tanning factories, etc., hence he wants to be in touch with the chemical literature published by the Chemical Society. (*Signed by*) B. P. B. Naidu, S. R. Khosla, N. A. Yajnik.

DALL, JOHN, 42, Bruntsfield Place, Edinburgh. British. Pharmaceutical Chemist. I desire to join the Chemical Society in order that I may receive the publications, attend the meetings, and have the use of the Library. (*Signed by*) A. Archibald Boon, A. Scott Dodd, George Barger.

DENHAM, HENRY GEORGE, Christchurch, New Zealand. Professor of Chemistry, Canterbury College, New Zealand. Educated at Canterbury College, N.Z.; M.A., M.Sc. (N.Z.), D.Sc. (Liv.), Ph.D. (Heid.); Fellow, Australian Chemical Institute. 1912–1920, Lecturer in Chemistry, University of Queensland. 1921–1922, Professor of Inorganic Chemistry, University of Cape Town. Author of numerous papers in Inorganic and Physical Chemistry, published in *J.C.S.; Zeit. phys. Chemie; Zeit. anorg. Chem.; Amer. Chem. Soc. Journ.* Author of text-book of Inorganic Chemistry. *Signed by*) A. M. Wright, A. J. Allmand, F. G. Donnan.

DICKES, WINIFRED ESTHER, "Eversley," Carlyle Road, Croydon. Research Student. B.Sc. Honours in Chemistry. One year's research done at Battersea Polytechnic. (*Signed by*) Joseph Kenyon, Robert H. Pickard, Harold Hunter.

DUERDEN, RICHARD BYRON, 6, Langholme Rd., Nelson, Lancs. British. Senior Chemistry Master, Nelson Secondary and Technical Schools. B.Sc. (Lond.), A.I.C. (*Signed by*) G. W. F. Holroyd, Robert H. Pickard, J. Kenyon, Harold Hunter.

DUTT, SIKHIBHUSHAN, 21, Cromwell Road, South Kensington, S.W. 7. Indian, Hindu. Research Student in Organic Chemistry in the Imperial College of Science and Technology, South Kensington, under Prof. Thorpe. Published 10 original papers in Organic Chemistry on synthetic dyestuffs, either singly or jointly, during the years 1921, 1922, and 1923, in the Journal

of the Chemical Society. Some more are in course of publication. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, G. A. R. Kon.

EGGLETON, PHILIP, 45, King's Road, Kingston, Surrey. English. Biochemist. Studied for Hons. Chem. degree at University College, London, 1919–1922. Took 2nd Class Hons. Now Demonstrator of Biochemistry to medical students at University College. (*Signed by*) W. E. Garner, Irvine Masson, J. N. E. Day.

EWELL, ERNEST WILLIAM, 37, Townwall Street, Dover. British. Dispensing and Analytical Chemist and Radiographer. A former pupil of W. H. Pendlebury (Dover College) and Norman Collie (Pharm. Society School, Bloomsbury Sq.) has been for over 25 years actively engaged in chemical examination of pathological specimens, and analyses of drugs and chemicals. This application is to ensure authentic data of new methods, with particular reference to clinical and biochemical tests, chemistry of colloids, and the modern atomic theory, as well as to attend meetings of the Society. (*Signed by*) E. W. Lucas, H. B. Stevens, G. Devenish Thomas, Ernest M. Hawkins, Herbert B. Hammond.

FARROW, MAURICE DUNCAN, 89, Windsor Road, Ilford, Essex. British. Research Student at the Royal College of Science. Associate of Royal College of Science. Bachelor of Science, Hons. Lond. (*Signed by*) C. K. Ingold, G. A. R. Kon, M. A. Whiteley.

FEATHERSTONE, CHARLES RICHMOND, Clifton Rise, York. English. Schoolmaster. 2nd Class Honours in Chemistry at Oxford, 1908. Fifteen years' experience in teaching Chemistry. Senior Science Master at St. Peter's School, York, since 1915. (*Signed by*) N. V. Sidgwick, A. F. Walden, D. Ll. Hammick, M. P. Applebey, B. Lambert.

GARNER, FREDERICK BASIL, 10, Richmond Rd., Wimbledon, S.W. 20. British. Teacher. B.Sc. (London), 1st Class Honours in Chemistry. A.R.C.S. (London) (1st Class in Chemistry). A.I.C. Assistant in Chemical Dept., Wimbledon Tech. Inst., 1912–1915. Head of Chemical Dept. Wimbledon Tech. Inst. 1919 up to present time. (*Signed by*) Arthur A. Eldridge, M. A. Whiteley, James C. Philip.

HARMAN, ROY WILLIAM, "Netherend," Woodcroft Avenue, Mill Hill, N.W. 7. British. Ph.D. Research student, University College, London. M.Sc. New Zealand, 1922. 1851 Exhibition Science Scholarship, N.Z., 1923. (*Signed by*) F. G. Donnan, W. E. Garner, Allan E. Mitchell.

HARPER, HUGH, c/o Anglo-Persian Oil Co., Ltd., Abadan, Persian Gulf. Scottish. Analytical Chemist. B.Sc. degree of Edinburgh University. Three years' course at Edinburgh University and Heriot Watt College. At present process chemist with Messrs. The Anglo-Persian Oil Co., Ltd., Abadan, Persian Gulf. (*Signed by*) Jas. Walker, G. L. Kennaby, C. E. Spearing.

HINDLE, FRANK, Sewage Work, Common Bank, Chorley, Lancs. English. Manager and Chemist, Sewage Works, Chorley. 4 Years under Mr. G. Guest, M.Sc., B.A., as private pupil, Haslingden. 3 Years under G. Boothmar. 1914 to 1920 Manager and Chemist, Ashton in Makerfield Sewage Works. 1920 to 1924 Man. and Chemist, Chorley Borough Sewage Works. (*Signed by*) Jas. H. Edmonson, W. E. Speight, W. H. Duckworth.

HOBSON, RALPH PERCIVAL, Rothamsted Experimental Station, Harpenden. British. Research Scholar in Agricultural Chemistry. B.Sc. Agriculture (London). 3½ Years at South-Eastern Agricultural College, Wye, Kent. B.Sc., 1st Class Honours in Chemistry. 2 Years at University College, London. (*Signed by*) H. J. Page, Irvine Masson, W. E. Garner.

HOLMES, ERIC LEIGHTON, 58, St. George's Sq., S.W. 1. English. Student, Research in Organic Chemistry. Associate of the Royal College of Science. (*Signed by*) M. A. Whiteley, G. A. R. Kon, C. K. Ingold.

ING, HARRY RAYMOND, 184, Divinity Road, Oxford. British. University Demonstrator, Oxford. 1st Class Honour School of Chemistry, Oxford. Senior Scholar, New College, Oxford, 1922–23. (*Signed by*) W. H. Perkin, E. Hope, S. G. P. Plant.

KESTNER, PAUL, 38, Rue Ribera, Paris-Auteuil, France. French. President Société de Chimie Industrielle. (*Signed by*) Henry E. Armstrong, W. P. Wynne, William J. Pope, E. F. Armstrong, E. V. Evans, G. G. Henderson.

LAY, FREDERICK CHARLES, University Settlement, Nile St., Liverpool. British. Schoolmaster. 2nd Class Final Hons., School of Chemistry, Oxford. Chemistry Master, Liverpool College. (*Signed by*) D. L. Chapman, S. G. P. Plant, G. R. Clemo, Fredk. A. Mason.

LEA, FREDERICK MEASHAM, 31, Greenway, Uxbridge, Middlesex. British. Research Chemist, Admiralty. M.Sc. (Birmingham) 1922. A.I.C. (*Signed by*) G. T. Morgan, C. E. Wood, A. E. Goddard, S. R. Carter, Frederick Challenger.

LEIGH, HARRY GRAHAM, 46, Brent View Rd., West Hendon, N.W. 9. British. Research Chemist to the British Launderers' Research Association. B.Sc. (Lond.). To keep in touch with recent advances in chemistry and to use the Library. (*Signed by*) R. G. Parker, J. T. Holden, Harold Hunter.

LEVY, EVA REBECCA, 21, St. James' Mansions, West Hampstead, N.W. 6. British. Student. Student in Chemistry Honours at Bedford College. (*Signed by*) H. Crompton, J. F. Spencer, M. S. Crewdson.

LOCKET, GEORGE HAZLEWOOD, Salmon's Cross, Reigate. English. Student. B.A. Oxon. (*Signed by*) N. V. Sidgwick, D. Ll. Hammick, S. G. P. Plant.

M'OWAN, GEORGE, Chattan House, St. Andrews. Scots. Research Assistant, University, St. Andrews. B.Sc., Ph.D., Ph.D. Thesis on Trimethyl Inulin. 1 Year engaged by D. S. I. R. At present lecturer assistant in St. Andrews. (*Signed by*) John Read, A. Killen Macbeth, J. C. Irvine.

MADGIN, WALTER MATTHEW, 3, Matfen Place, Fenham, Newcastle-on. Tyne. British. Lecturer in Chemistry at Armstrong College (Durham University). M.Sc. (Dunelm). A.I.C. (*Signed by*) P. Phillips Bedson, J. A. Smythe, W. N. Haworth, H. V. A. Briscoe.

MATTINGLEY, FRED, 3, Frankfurt Road, Herne Hill, S.E. 24. British. Analyst with Gutta Percha Co., Wharf Road, City Road, N. 1. General analytical work. 2½ Years' experience of Food and Drugs Analysis and general consulting practice as assistant to Mr. A. S. Carlos, 325, Kennington Rd., S.E. 11. B.Sc. (2nd Class Hons. Chem.) 1923, London University (Birkbeck College). A.I.C. Elected Dec. 1923. (*Signed by*) Claude S. Grace, John N. Dean, Arthur S. Carlos.

MENDELSOHN, OSCAR ADOLF, 85, Collins St., Melbourne, Victoria, Australia. British (born Nanango, Queensland). Public Analyst and Consulting Chemist. Full course in Chemistry, Sydney Technical College. B.Sc. Univ. of Melbourne (Hons. Chem. and Physiology). Consulting chemist to Magnesium Products Pty., Ltd., Hart Dyes, Ltd., Chelonia Ltd., Gippsland Co-op. Co., Ltd., etc. Director of Mag. Prod. Ltd. Associate Australian Chemical Institute (A.A.C.I.). Adviser on educational works to Postmaster General's Dept. (*Signed by*) N. T. M. Wilsmore, W. J. Young, Henry W. Levy.

MORE, ANDREW, Ellesmere, King's Road, Walton-on-Thames. British. Superintending Chemist. Government Laboratory, Clements Inn Passage, Strand, London, W.C. 2. Associate of the Royal Technical College, Glasgow. Associate of the Royal College of Science, London. Fellow of the Institute of Chemistry. (*Signed by*) Geo. Stubbs, J. J. Fox, Robert Robertson.

NEATHERCOAT, EDWARD TOM, C.B.E., J.P. The Elms, Weybridge, Surrey. British. President of the Pharmaceutical Society. (*Signed by*) W. P. Wynne, Arthur W. Crossley, Francis H. Carr.

OWLES, THOMAS RICHARD, 9, Bassett Road, London, W. 10. English. Pharmaceutical and Analytical Chemist. Member of Pharmaceutical Society, Great Britain. 1897, passed advanced stage Theoretical and Practical Chemistry (Science and Art Dept.). 1899, passed Cambridge Exam. honours in Theoretical and Pract. Chemistry. 1902, Assistant Chemist Messrs. Storham, Maidstone. 1903, Assistant, Messrs. Wollings, Sandown, I.O.W. 1904–5, studied Chemistry under Professor Alcock, Birmingham. 1906–7, Assistant to Mr. Rogers, Chemist, London. 1907–11, Managing Assistant to Mr. Poole, Birmingham. 1911–16, Manager, Lanham & Co., Chemists, London, W. 1916–20, Military Service. 1920–24, Manager, Hamilton & Co., Chemists, Piccadilly, W. (*Signed by*) Frank Radcliffe, Samuel Gray Fenton, Ralph Scott.

PARK, JAMES RITCHIE, 164, Lessingham Ave., Tooting, S.W. 17. British. Demonstrator in Chemistry. B.Sc. (London). 1st Class Honours in Chemistry. Paper (in conjunction with Prof. J. R. Partington) on "Reaction between Copper and Nitrogen Peroxide" submitted to Chemical Society, Oct. 1923. (*Signed by*) Eustace E. Turner, Percy C. Austin, J. R. Partington.

PRATT, DAVID DOIG, 57, Barlow Moor Rd., Didsbury, Manchester. British. Research Chemist at University, Manchester. (*Signed by*) Robert Robinson, Arthur Lapworth, Edmund L. Hirst.

RAE, JOHN, The Hollies, Thingwall Rd., Wavertree, Liverpool. British. Pharmacist. "Opium," by A. C. Abraham, F.I.C., assisted by H. E. Digby and J. Rae, paper read at Pharm. Soc. evening meeting in London, 25/4/22. "Further Notes on Opium," by A. C. Abraham, F.I.C., and J. Rae, Pharm. J., 5/8/22. "Loss of Morphine in Powdered Opium by Keeping," by A. C. Abraham, F.I.C., and J. Rae, Pharm. J., 14/7/23. (*Signed by*) A. C. Abraham, I. M. Heilbron, E. C. C. Baly.

ROBERT, ROGER LAURENT FELIX, 43, Pine Rd., Didsbury, Manchester. Research Chemist. Candidate for M.Sc.Tech. Part-time demonstrator in Organic Chemistry in the College of Technology, Manchester. (*Signed by*) Frank Lee Pyman, Fredk. M. Rowe, John K. Wood.

RUBIN, MAX, c/o P.O. Box 1140, Johannesburg, S.A. South African. M.P.S. Desirous of keeping in touch with chemical progress and of availing myself to possible facilities for further study. (*Signed by*) P. H. Woodnoth, Alfred Thomas, H. Sampson Wills.

RUSSELL, ALEXANDER SMITH, 4, Moreton Road, Oxford. British. D.Sc. (Glasgow). Student and Tutor of Christ Church, Oxford, and Dr. Lee's Reader in Chemistry. About thirty research papers in *Phil. Mag.*, *Phiyskal. Zeit.*, *Proc. Roy. Soc.*, *Journ. Chem. Soc.*, etc., on Radioactivity, and Physical Chemistry. *Books:* Author of "An Introduction to the Chemistry of Radioactive Substances." Part-author of "The Rare Earth Industry." (*Signed by*) W. H. Perkin, N. V. Sidgwick, T. W. J. Taylor, D. Ll. Hammick, S. G. P. Plant, E. Hope.

SAMSON, EDWARD, 1, Branksome Wood Rd., Bournemouth. British. Dental Surgeon (L.D.S., R.C.S., England). Studied Chemistry for three

years at the Asche's School under Wm. Ash, B.A. Subsequently a year's study in Chemistry under E. Jobling, M.A. A year's course of Organic and Inorganic Chemistry under Ellis Richards, F.I.C. A further course of Theoretical and Practical Metallurgy under Ellis Richards, F.I.C. A study of Bio-chemistry at Middlesex Hospital. A course of Materia Medica under F. Coleman, L.R.C.P., L.D.S. Assistant Demonstrator at Royal Dental Hospital in Histology and Microscopy. Now Book Prizeman in Histology. Assistantship was served with C. Bowdler Henry, L.R.C.P., M.R.C.S., L.D.S. (*Signed by*) J. E. Jewell, Frank Radcliffe, Samuel Gray Fenton.

SCHOFIELD, HAROLD, St. John's College, York. English. At present a student at the University of Leeds; intend to become a teacher of chemistry. Taking the B.Sc. examination in Honours Chemistry at the end of the present session. (*Signed by*) H. M. Dawson, J. B. Cohen, W. Lowson.

SCHOLES, ALFRED, Alma House, Junction Rd., Norton, Stockton-on-Tees. British. Analytical Chemist. Fellow of the Institute of Chemistry. Four years as pupil and 19 years as Chief Assistant Chemist with Messrs. Pattinson & Stead, Middlesbro'. Now partner in the firm of Pattinson & Stead. (*Signed by*) Cecil H. Desch, J. T. Dunn, J. G. Taylor.

SHER, HARRY NATHAN, 8, Cleve Rd., Hampstead. British. Research Student, Royal College of Science. A.R.C.S. B.Sc. (Hons. 2nd Class). (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, G. A. R. Kon, Arnold Stevenson.

SHIKATA, MASUZO, c/o Mrs. Bloman, Prague IV-261, Bašta sv. Jiři, Czecho-Slovakia. Japanese. Lecturer in Applied Chemistry in the Imperial University of Kyoto (Japan). Doctor of Agricultural Chemistry. Former research student in the Chemical and Physical Institute in Tokyo. Papers published: "Oxidation of Benzene" (*J. of Engineering Chemistry*, Japan, 1921). "Diffusion of Dyestuff" (*Kolloid Z.*, 1923, v). (*Signed by*) F. G. Donnan, Henry Terrey, J. Heyrovsky, L. F. Gilbert.

SHOPPEE, CHARLES WILLIAM, 38, Womersley Rd., Crouch End, N. 8. British. Research Student (Organic Chemistry). A.R.C.S., B.Sc. (*Signed by*) H. B. Baker, C. K. Ingold, G. A. R. Kon, M. A. Whiteley.

SILVESTER, WILLIAM ARTHUR, 10, Moxley Rd., Crumpsall, Manchester. British. Chemist. M.Sc. (1st Class Honours in Chemistry, Sheffield). Town Trust Fellow and 1851 Exhibition Research Scholar (Cambridge, 1915–16). Successively chemist with the Asiatic Petroleum Co., Ltd., H.M. Factory, Sandycroft, and the Anglo-Egyptian Oilfields, Ltd., Refinery, Suez, Egypt, and at present in the Research Department of the British Dyestuffs Corporation, Ltd. Published a note on the petrol from Borneo petroleum, *J. Soc. Chem. Ind.*, 1920, **39**, 187T. (*Signed by*) W. P. Wynne, J. Kenner, Arthur G. Green.

SMITH, FRANK HAROLD, Hazelbank, Beech Rd., Reigate. British. Librarian to the Gutta Percha Co., London. M.A., Cambridge. First Class Honours Natural Science Tripos, Part I and Part II. Third Class Honours Mathematical Tripos, Part I (New Regulations). Formerly Scholar of Pembroke College, Cambridge, and Research Scholar of the King Edward VII British-German Foundation. 1919–1922, Research Chemist with Messrs. Brotherton & Co., Ltd., Port Rainbow. (*Signed by*) Claude S. Grace, William Doran, R. W. Merriman, Harold Rogerson.

SMITH, LAURENCE FREDERICK, 62, Robertson Road, Brighton. British. Research Student at Royal College of Science, South Kensington. Associate of Royal College of Science (Chemistry). B.Sc., 2nd Class Honours in Chemistry. (*Signed by*) H. B. Baker, G. A. R. Kon, M. A. Whiteley.

SMITH, MARGARET LLEWELLYN, 5, The Grove, Highgate, N. 6. British.

Student. Student in Honours Chemistry at Bedford College. (*Signed by*) H. Crompton, J. F. Spencer, M. S. Crewdson.

STEAD, FREDERICK ARNOLD, 11, Queen's Terrace, Middlesbrough. British. Analytical Chemist. 1909–10–11–12 Matriculated Student, Durham University (Armstrong College). Special Course in Chemistry, Physics, Botany, Geology, and Mathematics. 1912–16, Assistant Chemist, Messrs. Pattinson and Stead, Middlesbrough. 1916–18, Assistant Chemist, Inspection Department, Ministry of Munitions, at the Royal Arsenal, Woolwich, and in the High Explosives Inspection Department, Leeds. 1919–date, Assistant Chemist, Messrs. Pattinson and Stead. Now partner in the firm of Pattinson and Stead. (*Signed by*) Cecil H. Desch, J. T. Dunn, J. G. Taylor.

SWAN, RICHARD LESLIE, 221, Bedford Rd., Rock Ferry, Cheshire. British. Assistant Chemist in the works laboratory of Lever Brothers, Ltd., Port Sunlight. Associate of the Royal College of Science, London. D.I.C. (research). Associate of Institute of Chemistry. B.Sc. (Hons.), London. Paper on "The Catalytic Effects of Mixtures of Cerium and Thorium Oxides and their Bearing on the Theory of the Welsbach Mantle," has been submitted to the Chemical Society. (*Signed by*) H. B. Baker, Jocelyn Thorpe, James C. Philip.

TAYLOR, GEORGE, Brook Cottage, Matlock Green, Derbyshire. English. Chemist. Associate of the Institute of Chemistry. Studied from 1919–1923 at University College, Nottingham, including one year's research. Assistant Chemist with Home Grown Sugar Coy., Newark, during 1923 campaign. (*Signed by*) H. Baines, H. Phillips, A. G. Crossley, B. D. Shaw.

THORNLEY, SIDNEY, 10, Kersal Avenue, Pendlebury, near Manchester English. Ph.D. Research Student in Chemistry, Victoria University, Manchester. 1st Class Honours, B.Sc. (Victoria). M.Sc. (Victoria); theses entitled, (*a*) "Several experiments on the addition of hydrogen cyanide to ethylidene malonic ester," (*b*) "Condensation of β-aminoanthraquinone and succinic anhydride," the work being performed under the supervision of Professor Lapworth. Dalton Chemical Scholar. At present engaged in research under the supervision of Professor Robinson with a view to qualifying for the degree of Ph.D. (*Signed by*) H. B. Dixon, R. Robinson, Arthur Lapworth, Henry Stephen.

TOPLEY, BRYAN, 104, Park Lane, Croydon. British. Student, Oxford University. B.A. Oxford. Part author of papers in the Proceedings of the Royal Society and in the Transactions of the Chemical Society. (*Signed by*) M. P. Applebey, C. N. Hinshelwood, H. R. Raikes, E. J. Bowen.

TURNER, EMILY GERTRUDE, 2, Steel Bank Villas, Commonside, Sheffield. British. Assistant Lecturer in Chemistry, Sheffield University. M.Sc. (Sheffield). Joint author with Dr. Kenner of the following papers: "Formation of Six- and Seven-Membered Rings from Derivatives of 2 : 2′-Ditolyl," *Trans.*, 1911, **99**, 2101; "A synthesis of Phenanthrene," *Proc.*, 1911, 92; "Reactions of Dibenzo*cyclo*heptadienone," *Proc.*, 1912, 277. (*Signed by*) M. A. Whiteley, W. P. Wynne, J. Kenner, James C. Philip, Jocelyn Thorpe, Arthur W. Crossley.

WALTON, FRANK PERCY, 121, Culverley Road, Catford, London, S.E. 6. British. Student, Royal College of Science. Seven years' experience at the Wellcome Chemical Research Laboratories, 6, King Street, Snow Hill, Holborn, E.C. 1. (*Signed by*) James C. Philip, J. N. Sugden, T. A. Henry.

WARNE, REGINALD BERNARD, 98, Argyle Rd., West Ealing, W. 13. British. Analytical Chemist and Bacteriologist. I am an expert fat, oil, and milk analyst, and hold the position of chief assistant analyst and

bacteriologist to Messrs. Van den Berghs, margarine manufacturers of Fulham. I have lately been engaged on the separation of pure isolated fatty acids from fats with a view to obtaining more accurate methods of analysis. (*Signed by*) Percy Edgerton, Leslie E. Wakeford, Donald Powell, Stephen B. Bowyer.

WEIR, JOHN, Nobel's Explosive Co., Ltd., Ardeer Factory, Stevenston, Ayrshire. British. Research Chemist. M.A., B.Sc. (St. Andrews). Ph.D. (Würzburg). F.I.C. (*Signed by*) Wm. Rintoul, Thomas J. Nolan, William Barbour.

WESTGARTH, GEORGE CRONE, Wolsingham, Co. Durham. British. Research Student (Chemistry). 1st Class Honours (Chemistry), Final B.Sc. (Dunelm). 16 Months' research in Chemistry. (*Signed by*) W. N. Haworth, J. A. Smythe, C. F. Allpress.

WHITING, WILLIAM ARTHUR, 9, Kensington Ave., Watford, Herts. British. Chief Chemist to Henry H. Butterfield, Analytical, Consulting, and Manufacturing Chemist, Watford. Complete course in Chemistry, chiefly Inorganic, extending over five years. Also 2 years' course in oils, etc., Regent Street Polytechnic. For 3 years Assist. Chemist with Messrs. Chemical and Metallurgical Corp., Willesden. For 2 years Assist. Chemist with Messrs. English Oilfields, Ltd., King's Lynn. For 1½ years Chief Chemist with Messrs. Carbon Products Ltd., Chiswick. For 2 years in present position. I wish to join the Chemical Society in order to keep in touch with recent developments of Chemistry and to have use of the Society's Library. (*Signed by*) T. H. Byrom, P. N. Williams, H. H. Butterfield.

WILLIAMS, FRANK ARCHER, 27, Cotswold Rd., Westcliff-on-Sea. British. Research Chemist. 1922, B.Sc., 1st Class Honours in Chemistry. (*Signed by*) J. R. Partington, A. J. Prince, W. G. Shilling.

WORBOYS, WALTER JOHN, Lincoln College, Oxford. British (Australian). Research Student. Bachelor of Science, University of Western Australia. Research Student, University of Oxford. (*Signed by*) N. V. Sidgwick, E. Hope, S. G. P. Plant.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

LAZARUS, LIONEL, 18, Crart Avenue, Durban, Natal. British (S.A. Colonial). Analytical Chemist. Head chemist, S.A. Oil and Fat Industries, Jacobs, Natal. Seven years student, Natal Technical College, Durban (N.A.T.C. Diploma). (*Signed by*) Chas. Douglas Golding, E. A. Halm.

MILES, JOHN LAURENCE, 36, Merian St., Lexington, Mass., U.S.A. United States Citizen. Research Student, Harvard University. Working simultaneously two problems under Dr. Kohler and Dr. Kemble. I have served as a chemist in analytical work for the Atlantic Carbium Co., Chelsea, Mass., and as a research chemist for the Eastman Kodak Co., but feeling my knowledge inadequate have returned to Harvard for further study. (*Signed by*) T. W. Richards.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Fifth report on colloid chemistry and its general and industrial applications. (With index to the five reports.) London 1923. pp. iv + 130. 2*s*. 6*d*. net. (*Recd*. 19/12/23.)

From the Department of Scientific and Industrial Research.

CLOWES, FRANK, and COLEMAN, JOSEPH BERNARD. Quantitative chemical analysis adapted for use in the laboratories of colleges, of technical institutes, and of analysts. 12th edition. London 1924. pp. xxiv + 576. ill. 18*s*. net. (*Recd*. 7/1/24.)

From the Publishers: Messrs. J. & A. Churchill.

CUMMING, WILLIAM MURDOCH, HOPPER, ISAAC VANCE, and WHEELER, THOMAS SHERLOCK. Systematic organic chemistry: modern methods of preparation and estimation. London 1923. pp. xxiv + 535. ill. 25*s*. net. (*Recd*. 19/12/23.)

From the Publishers: Messrs. Constable & Co.

ROYAL COLLEGE OF SCIENCE CHEMICAL SOCIETY. Journal. Vol. I. Containing the papers read before the Society during the session 1913 to 1914. London 1915. pp. xiv + 74. ill. (*Reference*.) From the Secretary.

SEARLE, ALFRED BROADHEAD. The chemistry and physics of clays and other ceramic materials. London 1924. pp. xiv + 696. ill. 55*s*. net. (*Recd*. 6/12/23.)

From the Publishers: Messrs. Ernest Benn.

SMYTHE, JOHN ARMSTRONG. Lead: its occurrence in nature, the modes of its extraction, its properties and uses, with some account of its principal compounds. London 1923. pp. viii + 344. ill. 16*s*. net. (*Recd*. 28/11/23.)

From the Publishers: Messrs. Longmans, Green & Co.

SPIELMANN, PERCY EDWIN. The genesis of petroleum. London 1923. pp. vi + 72. 5*s*. net. (*Recd*. 26/11/23.) From the Author.

THURSTON, AZOR. Pharmaceutical and food analysis: a manual of standard methods for the analysis of oils, fats, and waxes, and substances in which they exist; together with allied products. London 1923. pp. xiv + 416. ill. 21*s*. net. (*Recd*. 19/11/23.)

From the Publishers: Messrs. Chapman & Hall.

URAL. A collection of technical and economical articles. Vol. I. Ekaterinberg 1922. (*Reference*.) [In Russian.]

From the Publishers.

VAN NOSTRAND'S Chemical Annual: a handbook of useful data for analytical, manufacturing, and investigating chemists, chemical engineers, and students. 5th issue, 1922. Edited by JOHN

CHARLES OLSEN, assisted by T. R. LECOMPTE. [New York] 1923. pp. xxii + 900. ill. (*Reference.*) 21*s.* net.

From the London Publishers: Messrs. Constable & Co.

WARNES, ARTHUR ROBERT. Coal tar distillation and working up of tar products. 3rd edition. London 1923. pp. xvi + 512. ill. 45*s.* net. (*Recd.* 30/11/23.)

From the Publishers: Messrs. Ernest Benn.

II. *By Purchase.*

AEBY, JULES. Dangerous goods. 2nd edition. Anvers 1922. pp. xii + 320. (*Reference.*) 30*s.* net.

ALLEN, ALFRED HENRY. Commercial organic analysis. 5th edition. Edited by SAMUEL S. SADTLER, ELBERT C. LATHROP, and CHARLES AINSWORTH MITCHELL. Vol. I, etc. London 1924 +. (*Reference.*) 30*s.* net.

BRUNSWIG, H. Explosivstoffe auf Grund des in der Literatur veröffentlichten Materials. 2nd edition. Leipzig 1923. pp. xiv + 216. ill. (*Recd.* 19/11/23.)

BRUTTINI, ARTURO. Uses of waste materials: the collection of waste materials and their uses for human and animal food, in fertilisers, and in certain industries, 1914—1922. London 1923. pp. xx + 368. ill. 12*s.* net. (*Recd.* 18/12/23.)

DRYSDALE, C. V. [and others]. The mechanical properties of fluids: a collective work. London 1923. pp. xvi + 362. ill. 20*s.* net. (*Recd.* 15/1/24.)

FOURNIER D'ALBE, EDMUND EDWARD. The life of Sir William Crookes. London 1923. pp. xx + 414. ill. 25*s.* net. (*Recd.* 18/12/23.)

FREUNDLICH, HERBERT. Kapillarchemie. 3rd edition. Leipzig 1923. pp. xvi + 1226. ill. (*Recd.* 6/12/23.)

GIBBS, WILLIAM E. Clouds and smokes: the properties of disperse systems in gases and their practical applications. London 1924. pp. xiv + 240. ill. 10*s.* 6*d.* net. (*Recd.* 28/12/23.)

HARBORD, FRANK WILLIAM, and HALL, JOHN W. The metallurgy of steel. 7th edition. 2 vols. London 1923. pp. xii + [560], xvi + 554. ill. 64*s.* net. (*Recd.* 6/12/23.)

INSTITUTE OF PHYSICS, with the co-operation of the NATIONAL PHYSICAL LABORATORY. Journal of Scientific Instruments: a monthly publication dealing with their principles, construction, and use. Preliminary number, May 1922. Vol. I, etc. London 1923 +. (*Reference.*)

KÖNIG, JOSEF. Die Untersuchung landwirtschaftlich und landwirtschaftlich-gewerblich wichtiger Stoffe. 5th edition. Vol. I. Berlin 1923. pp. xvi + 950. ill. (*Recd.* 19/12/23.)

KRAMERS, H. A., and HOLST, HELGE. The atom and the Bohr theory of its structure: an elementary presentation. [Translated from the Danish by R. B. LINDSAY and RACHEL T. LINDSAY.] London 1923. pp. xiv + 210. ill. 10*s*. 6*d*. net. (*Recd*. 18/12/23.)

M'INTOSH, JOHN GEDDES. Industrial alcohol: the production and use of alcohol for industrial purposes, for use as an illuminant and as a source of motive power. 2nd edition. By HERBERT BIRTWHISTLE STOCKS. London 1923. pp. xii + 400. ill. 12*s*. 6*d*. net. (*Recd*. 18/12/23.)

MARILLER, CHARLES. Manuel du distillateur. Paris 1923. pp. iv + 305. ill. (*Recd*. 22/11/23.)

MARTIN, GEOFFREY. The modern soap and detergent industry, including glycerol manufacture: a complete practical treatise in three volumes. Vol. I. London 1924. pp. xii + [370]. ill. 36*s*. net. (*Recd*. 15/1/24.)

MAYRHOFER, ADOLF. Mikrochemie der Arzneimittel und Gifte: die offizinellen anorganischen und organischen Säuren und ihre Salze. Berlin 1923. pp. xxii + 286. ill. (*Recd*. 28/11/23.)

MIKROCHEMIE: Zeitschrift für das Gesamtgebiet der Mikrochemie und Mikrophysik. Year I, etc. Wien 1923 +. (*Reference*.)

PAUL, JAMES HUGH. Boiler chemistry and feed water supplies. 2nd edition. London 1923. pp. xii + 252. ill. 14*s*. net. (*Recd*. 28/12/23.)

PRINGSHEIM, HANS. Die Polysaccharide. 2nd edition. Berlin 1923. pp. vi + 234. (*Recd*. 6/12/23.)

RISTENPART, EUGEN. Chemische Technologie der Gespinstfasern: praktisches Hilfs- und Lehrbuch für Bleicher, Färber, Drucker und Ausrüster sowie zum Unterricht an Fach- und Hochschulen. Part I. Berlin 1923. pp. viii + 322. ill. (*Recd*. 19/12/23.)

ROUX, ULYSSE. La grande industrie des acides organiques: Bitartrate de potassium. Acide tartrique. Acide citrique. 2nd edition. By ALBERT AUBRY. Paris 1923. pp. viii + 560. ill. (*Recd*. 22/11/23.)

SAVAGE, WILLIAM GEORGE. Canned foods in relation to health. (Milroy Lectures, 1923.) Cambridge 1923. pp. viii + 146. ill. 8*s*. 6*d*. net. (*Recd*. 15/1/24.)

SEARLE, ALFRED BROADHEAD. Sands and crushed rocks. 2 vols. London 1923. pp. xiv + 476, x + 282. ill. 52*s*. 6*d*. net. (*Recd*. 15/1/24.)

WARDLE, ROBERT A., and BUCKLE, PHILIP. The principles of insect control. Manchester 1923. pp. xvi + 296. ill. 20*s*. net. (*Recd*. 18/12/23.)

WARREN, CYPRIAN ALFRED. Brewing waters: a reprint after

revision of a series of articles from *The Brewing Trade Review*. London 1923. pp. iv + 117. ill. 10*s*. net. (*Rced*. 31/12/23.)

III. *Pamphlets*.

ASKEW, H. O. The solubility and hydrolysis of calcium carbonate. (From the *Trans. New Zealand Inst.*, 1923, **54**.)

BANGKOK, SIAM. *Ministry of Commerce*. The Government Laboratory. 1st Report, etc. Bangkok 1923 +.

BROOKS, MATILDA MOLDENHAUER. The penetration of arsenic into living cells. (From the *Proc. Soc. Exper. Biol. Med.*, 1922, **20**.)

—— New quantitative observations on the penetration of acids and alkali bicarbonates into living and dead cells. (From the *Proc. Soc. Exper. Biol. Med.*, 1923, **20**.)

—— Studies on the permeability of living and dead cells. I and II. (From the *U.S. Public Health Reports*, 1923, **38**.)

IRWIN, MARIAN, and WEINSTEIN, MARGARET. Comparative studies on respiration. XXI. Acid formation and decreased production of CO_2 due to ethyl alcohol. (From the *Amer. J. Bot.*, 1922, **9**.)

KNIBBS, SIR GEORGE HANDLEY. Science and its service to man: Presidential address to the Australasian Association for the Advancement of Science, 1923. Wellington 1923. pp. 46.

LYON, C. J. Comparative studies on respiration. XVIII. Respiration and antagonism in Elodea. (From the *Amer. J. Bot.*, 1921, **8**.)

MOIR, JAMES. Colour and chemical constitution. Part XVII. The azo dyes and other monocyclic colours. (From the *Trans. Roy. Soc. S. Africa*, 1923, **10**.)

POLAND. I^{szy} Zjazd Chemików Polskich: w Warszawie, 3–6 Kwietnia Roku 1923. Warszawa 1923. pp. xxiv + 64.

RABER, ORAN L. A quantitative study of the effect of anions on the permeability of plant cells. II. (From the *Amer. J. Bot.*, 1921, **8**.)

—— The effect upon permeability of polyvalent cations in combination with polyvalent anions. (From the *Amer. J. Bot.*, 1921, **8**.)

—— The effect upon permeability of (i) the same substance as cation and anion, and (ii) changing the valency of the same ion. (From the *Amer. J. Bot.*, 1921, **8**.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation Board*. Special Report No. 14, by the Engineering Committee. The thermal properties of ethyl chloride. By CHARLES FREWEN JENKIN and D. N. SHORTHOSE. London 1923. pp. vi + 36. ill.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 7th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Lawrence Briant	Dec. 6th, 1883.	Jan. 30th, 1924.
Philip Buckle	June 17th, 1920.	Jan. 16th, 1924.
John Daniel Custance	Dec. 15th, 1881.	Dec. 15th, 1923.
Surendranath Dhar	May 1st, 1919.	Dec. 9th, 1923.
James Laker Macmillan	April 17th, 1879.	?
John Rymer Young	June 21st, 1877.	Nov. 13th, 1923.

The PRESIDENT referred to the following statement concerning the work of the Bureau of Chemical Abstracts:

As already announced, the Bureau of Chemical Abstracts was formed in the latter part of 1923, as the result of a joint agreement between the Councils of the Chemical Society and the Society of Chemical Industry, with the object of co-ordinating and, if possible, unifying the abstracts hitherto published separately by the two Societies. The work of the Bureau is in the hands of a Committee consisting of four representatives from each Society, with Prof. J. C. Philip as Chairman.

The Bureau was, at an early stage, called upon to deal with the position created by the resignation, through ill-health, of Mr. A. J. Greenaway, who has been connected, for a long period of years, with the publications of the Chemical Society. His experience, fortunately, is at the disposal of the Bureau in its reorganisation of the production of abstracts.

The Bureau has now arranged for a single homogeneous editorial staff, which will, in future, be responsible for the preparation and production of the abstracts both in pure and applied chemistry. The chief Editor, who will be responsible for the organisation of the

scheme and the general control of the abstracts, is Mr. T. F. Burton, who for the past nine years has been Editor of the Transactions and Abstracts issued by the Society of Chemical Industry.

The further decision has been reached that the abstracts in each particular section should, as far as possible, come under the review of an Assistant-Editor, with special knowledge of the subjects covered by the section. The Bureau has, accordingly, appointed the following as Assistant-Editors :—H. M. Dawson (General and Physical Chemistry), A. A. Eldridge (Inorganic and Analytical Chemistry), W. E. Garner (General and Physical Chemistry), H. J. Page (Biochemistry), E. H. Rodd (Organic Chemistry; Aromatic Division), A. Shonk (Applied Chemistry), E. E. Turner (Organic Chemistry; Heterocyclic Division), H. Wren (Organic Chemistry; Aliphatic Division).

It is felt that this move in the direction of securing unity in editorial and technical control represents a distinct step towards the achievement of the objects of the Bureau.

The following were formally admitted Fellows of the Chemical Society : E. N. Allott and G. Thomas.

Certificates were read for the first time in favour of :

Wilson Birchenough, B.Sc., 47, Petworth Road, Friern Barnet.
Alfred Cecil Cramp, Palmer's School, Grays.
Joseph John Etridge, B.Sc., 24, Lynmouth Road, Stamford Hill, N. 16.
Frederick Kenneth Ewart, B.A., Exeter College, Oxford.
Herbert Firth, Poplar Cottage, Scholes, Cleckheaton.
Percy Gillman, B.Sc., Oakmount School, Arnside.
Foad Mikhail Gindi, B.Sc., The University, Edmund Street, Birmingham.
Hubert Teare Harry, B.Sc., Northleigh, Tywardreath, Par Station.
Francis William Hodges, B.Sc., 30, Forest Road, Kew.
John Alexander Hogg, Burston House, Pittville Circus, Cheltenham.
Harold Vivian Horton, B.Sc., A.I.C., 9, Brambledown Road, Wallington.
John Innes, B.Sc., 1, Trinity Street, Hawick.
Ram Chandra Khanna, B.Sc., Khalsa A.V. School, Lyallpur, India.
Louis Klein, B.Sc., 44, Downs Park Road, Hackney, E. 8.
Joseph Malsbury, 6, Gordon Road, Weston-super-Mare.
Godfrey Vincent John Maxted, B.A., Elloughton, Brough, Yorks.
Eric George Kemp Pritchett, 5, Willows Crescent, Cannon Hill, Birmingham.
Thomas Roberts, 17, Earle Street, Wrexham.
Ralph John Seal, B.Sc., A.I.C., 14, Woodend, Sutton.
Ian Charles Park Smith, 6, Dermody Gardens, Lewisham, S.E. 13.
Charles Mansfield Swain, 6, High Street, Langley, Birmingham.
Joseph Hughes Williams, B.Sc., 31, Salt Avenue, Stafford.
Frank Beresford Windle, 16, Perryn Road, Acton, W. 3.

The following papers were read :

" The activity of hydrogen-ion in aqueous solutions of hydrofluoric acid." By W. F. K. W. Jones and L. J. Hudleston.

"The solubility of the aminophenols." By N. V. SIDGWICK and R. K. CALLOW.

"Abnormal benzene derivatives." By N. V. SIDGWICK and R. K. CALLOW.

"The conductivity and ionisation of solution of potassium iodide in nitromethane." By J. C. PHILIP and H. B. OAKLEY.

"The solubility of aniline sulphonic acids." By J. C. PHILIP and R. S. COLBORNE.

"Mercuration of nitrohydroxybenzaldehydes." By T. A. HENRY and T. M. SHARP.

Ordinary Scientific Meeting, Thursday, February 21st, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of :

	Elected.	Died.
John Fenton Newall.....	June 16th, 1892.	Feb. 5th, 1924.
John James Beaumont Rees	Feb. 17th, 1910.	?
Frederick George Adair Roberts ...	June 21st, 1883.	Feb. 10th, 1924.

The PRESIDENT announced that the Council had resolved to award the Longstaff Medal this year to Prof. F. G. Donnan, F.R.S.

Certificates were read for the first time in favour of :

Profulla Kumar Banerjee, 37/1 Kasimitter's Ghat Street, Calcutta.
John Barnett, B.Sc., A.I.C., 111, Kingsley Avenue, West Ealing, W. 13.
Maurice John Burgess, 48, Sandford Grove Road, Nether Edge, Sheffield.
Aubrey Wilson Dye, Invertiel, Martin Road, Centennial Park, Sydney.
Frederick Charles Randall, M.Sc., A.I.C., 10, Beauchamp Avenue, Leamington Spa.
Archibald Lewis Roberts, 4, Victoria Street, Shrewsbury.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

Frederick William Webb Butler, 8, Forest Road, Bulwer Park, Durban.
Stanislaw Kazimierz Kon, Ph.D., ul. Piekna 41m. 6, Warsaw.
Pramatha Nath Paul, B.Sc., Ramtek P.O., C.P., India.

Messrs. G. W. Clough and E. W. Lewis were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

William Richardson Anderson, B.Sc.
Reginald Graham Atkinson, A.R.C.S.
Charles Edward Baldwin, B.A., A.I.C.
Wilfrid Barnard S. Bishop, B.Sc.
Thomas Ethelred Wilby Browne, B.Sc.
Francis Herbert Culverhouse Butler, B.A., A.I.C.
Harold John Channon, B.A., B.Sc.
Frederick William Jeffrey Clendinnen, M.Sc.
Alan Rowland Cluer, B.Sc., A.R.C.S.
George Duncan Crosley.
Reginald Stanley Crowle.
William Murdoch Cumming, B.Sc., F.I.C.
Talati Dadabhai Cursedji, D.T.M., D.P.H.
John Dall.
Henry George Denham, M.A., D.Sc., Ph.D.
Winifred Esther Dickes, B.Sc.
Richard Byron Duerden, B.Sc., A.I.C.
Sikhibhushan Dutt.
Philip Eggleton, B.Sc.
Ernest William Ewell.
Maurice Duncan Farrow, B.Sc., A.R.C.S.
Charles Richmond Featherstone, B.A.
Frederick Basil Garner, B.Sc., A.I.C.
Roy William Harman, M.Sc.
Hugh Harper, B.Sc.
Frank Hindle.
Ralph Percival Hobson, B.Sc.
Eric Leighton Holmes, A.R.C.S.
Harry Raymond Ing, B.A.
Paul Kestner.
Frederick Charles Lay, B.A.
Lionel Lazarus.
Frederick Measham Lea, M.Sc., A.I.C.
Harry Graham Leigh, B.Sc.
Eva Rebecca Levy.
George Hazlewood Locket, B.A.
George M'Owan, B.Sc., Ph.D.
Walter Matthew Madgin, M.Sc., A.I.C.
Fred Mattingley, B.Sc., A.I.C.
Oscar Adolf Mendelsohn, B.Sc.
John Laurence Miles.
Andrew More, A.R.C.S., F.I.C.
Edward Tom Neathercoat, C.B.E., J.P.
Thomas Richard Owles.
James Ritchie Park, B.Sc.
David Doig Pratt.
John Rae.
Roger Laurent Felix Robert.
Max Rubin.
Alexander Smith Russell, D.Sc.
Edward Samson, L.D.S.
Harold Schofield.
Alfred Scholes, F.I.C.
Harry Nathan Sher, B.Sc., A.R.C.S.
Masuzo, Shikata, D.Chem. (Agric.).
Charles William Shoppee, B.Sc., A.R.C.S.
William Arthur Silvester, M.Sc.
Frank Harold Smith, M.A.
Laurence Frederick Smith, B.Sc., A.R.C.S.
Margaret Llewellyn Smith.
Frederick Arnold Stead.
Richard Leslie Swan, B.Sc., A.I.C.
George Taylor, A.I.C.
Sidney Thornley, M.Sc.
Bryan Topley, B.A.
Emily Gertrude Turner, M.Sc.
Frank Percy Walton.
Reginald Bernard Warne.
John Weir, M.A., B.Sc., Ph.D., F.I.C.
George Crone Westgarth, B.Sc.
William Arthur Whiting.
Frank Archer Williams, B.Sc.
Walter John Worboys, B.Sc.

The following papers were read :

"The rotatory dispersive power of organic compounds. Part XI. Octyl alcohol and octyl oxalate." By T. M. LOWRY and E. M. RICHARDS.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXII. Simple and complex rotatory dispersion." By H. HUNTER.

"The rotatory dispersive power of organic compounds. Part XII. Borneol, camphor, and camphorquinone. Asymmetric atoms and asymmetric molecules." By J. O. CUTTER and T. M. LOWRY.

"The rotatory dispersive power of organic compounds. Part XIII. Halogen derivatives of camphor. Optical superposition in the camphor series." By J. O. CUTTER and H. BURGESS.

ANNUAL GENERAL MEETING.

The Annual General Meeting will take place on Thursday, March 27th, 1924, at 4 p.m., when the President, Professor W. P. WYNNE, D.Sc., F.R.S., will deliver his Address.

INFORMAL DINNER.

An Informal Dinner will be held at the Hotel Cecil, Strand, W.C., on Thursday, the 27th March, 1924 (the day of the Annual General Meeting) at 7 for 7.30 p.m.

The toast list will be a short one, the speeches, which will not exceed six in number, being brief; a programme of music will be arranged, and opportunities will be given for social intercourse before and during the dinner.

Tickets, price 7*s.* each (including gratuities to waiters) can be obtained from the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, W. 1, on receipt of a remittance (made payable to Mr. S. E. Carr) for the number of tickets required.

It will facilitate arrangements if Fellows will apply for tickets at an early date, in any event before March 20th.

List of papers, or Abstracts thereof, received between January 18th, 1924, and February 21st, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The reaction between phosphorous acid and mercuric chloride." By A. D. MITCHELL.

"The volumetric estimation of titanium." By A. M. MORLEY and J. K. WOOD.

"Nitrosulphophenyldehydrothiotoluidinesulphonic acid." By D. H. PEACOCK.

"The action of dry hydrogen chloride on a dry solution of a chloroamine." By F. G. SOPER.

"The freezing-point curves for the system aceto-2-chloroanilide and aceto-4-chloroanilide." By K. J. P. ORTON and G. OWEN.

"The application of Weerman's reaction to a methylated sugar." By J. C. IRVINE and J. PRYDE.

"The constitution of polysaccharides. Part VIII. The molecular structure of β-hexa-amylose." By J. C. IRVINE, H. PRINGSHEIM, and J. MACDONALD.

"The action of the mono- and di-sulphides of sodium on chloro-nitro-compounds. Part I. 1-Chloro-2-nitro-benzene." By H. H. HODGSON and J. H. WILSON.

"Dyes of the aurin type. Part II." By H. BAINES and J. E. DRIVER.

"The chlorination of ethyl alcohol." By F. D. CHATTAWAY and O. G. BACKEBERG.

"Formation of quaternary ammonium salts. Part II." By E. DE B. BARNETT, J. W. COOK, and W. C. PECK.

"Optically active β-phthalimino-β-phenylpropiophenones." By A. MCKENZIE and T. M. A. TUDHOPE.

"The effect of complex formation on oxidation potentials: the influence of the cyanide-ion on the ferro-ferricyanide potential." By J. A. V. BUTLER and G. P. DAVIES.

"The oxidation of sabinene with chromyl chloride. A correction." By G. G. HENDERSON and J. M. ROBERTSON.

"The optically active sulphilimines." By F. G. MANN and W. J. POPE.

"The dissolution of gelatin. Part II." By F. FAIRBROTHER.

"The isomorphism of the amides and substituted amides of dichloro- and chloroiodo-acetic acids, and of chlorobromo- and chloroiodo-acetic acids." By P. V. MCKIE.

"Investigations on the dependence of rotatory power on chemical constitution. Part XXIII. The normal aliphatic ethers of *d*-γ-nonanol." By J. KENYON and T. W. BARNES.

"Further applications of thallium compounds. Part I. Thallous hydroxide." By R. C. MENZIES and E. M. WILKINS.

"Cryoscopy in sodium sulphate decahydrate." By E. E. TURNER and W. H. PATTERSON.

"The mutarotation of the sugars." By R. GILMOUR.

"Glycogen. Part I. Partial methylation, and the isolation of methylated glucoses." By A. K. MACBETH and J. MACKAY.

"The reaction between lime and nitrogen peroxide." By J. R. PARTINGTON and F. A. WILLIAMS.

"Varying valency of gold with respect to mercaptanic radicles. Part I." By P. C. RÂY.

"A study of colour in complex diazoles. Part I." By G. C. CHAKRAVARTI.

"The velocity of benzylation of certain amines." By D. H. PEACOCK.

"Derivatives of 3-oxy(1)thionaphthen." By L. R. HART and S. SMILES.

"The action of nitrogen peroxide on cuprous oxide." By J. R. PARTINGTON.

"The reduction of nitronaphthalenes. Part II. Reduction of β-nitronaphthalene." By W. M. CUMMING and G. S. FERRIER.

"The slow hydrolysis of complex salts. Part I. Chloropentamminecobalt chloride." By F. G. TRYHORN and G. JESSOP.

"The hydrogen overvoltage of zinc." By G. M. WESTRIP.

"The formation of 3-halogenocarbazoles from carbazole-3-diazonium halides." By S. H. TUCKER.

"The sulphonation of glyoxalines. Part II." By R. FORSYTH, J. A. MOORE, and F. L. PYMAN.

"Induced alternate polarities in a carbon chain on the basis of Bohr's theory." By K. HOJENDAHL.

"Researches on phellandrenes. Part II." By H. G. SMITH, P. G. CARTER, and J. READ.

"Influence of intensive drying on inner equilibria." By A. SMITS.

"A new apparatus for chemical reactions in the presence of light." By R. G. ATKINSON.

"The dimorphism of diphenylarsenious chloride (diphenylchloroarsine)." By C. S. GIBSON and (the late) D. C. VINING.

"The isomerism of the oximes. Part XVII. The action of 2 : 4-dinitrochlorobenzene on some isomeric aldoximes." By O. L. BRADY and R. TRUSZKOWSKI.

"On the thermal decomposition of chlorine monoxide." By J. ZAWIDZKI.

"On the velocity of nitration of phenol." By J. ZAWIDZKI.

"Derivatives of semioxamazide. Part II." By F. J. WILSON and E. C. PICKERING.

"Influence of colloids on the rate of reactions involving gases. Part II. Decomposition of hydrogen peroxide and of nitrosotriacetonamine." By A. FINDLAY and W. THOMAS.

"The ultra-violet absorption spectrum of eugenol." By G. THOMPSON.

"The action of thionyl chloride on alizarin. A correction." By A. GREEN.

"On the reactivity of solid phases." By J. A. HEDVALL.

"The purification of acetic acid." By K. J. P. ORTON and A. E. BRADFIELD.

"Tellurium monoxide." By J. J. DOOLAN and J. R. PARTINGTON.

"Polymorphic nitrobenzal hydrazones." By F. D. CHATTAWAY and A. J. WALKER.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

BEDFORD, CLAYTON W., and WINKELMANN, HERBERT A. Systematic survey of rubber chemistry: a bibliography, with copious abstracts, of the entire literature of rubber chemistry and closely allied subjects . . . together with a patent index, and introductory chapters summarizing the present status of rubber chemistry. New York 1923. pp. 386. (*Reference.*) $7 net.

From the Publishers: The Chemical Catalog Company, Inc.

CONGRESSO NAZIONALE DI CHIMICA PURA ED APPLICATA. I. Atti. Roma 1923. pp. xxviii + 512. (*Reference.*)

From the Secretary.

GARDNER, WILLIAM. Chemical synonyms and trade names: a dictionary and commercial handbook. London 1924. pp. vi + 271. (*Reference.*) 25*s.* net.

From the Publishers: Messrs. Crosby Lockwood & Son.

HALSE, EDWARD. Cobalt ores. (Imperial Institute Monograph on Mineral Resources.) London 1924. pp. x + 54. ill. 3*s.* 6*d.* net. (*Recd.* 25/1/24.) From the Director.

HITCHCOCK, FRANK LAUREN, and ROBINSON, CLARK SHOVE. Differential equations in applied chemistry. New York 1923. pp. vi + 110. ill. 7*s.* 6*d.* net. (*Recd.* 24/1/24.)

From the London Publishers: Messrs. Chapman & Hall.

IMPERIAL INSTITUTE. Vanadium ores. (Imperial Institute Monograph on Mineral Resources.) London 1924. pp. x + 72. 5*s.* net. (*Recd.* 8/2/24.) From the Director.

MYDDLETON, WILLIAM WHALLEY, and BARRY, THOMAS HEDLEY. Fats: natural and synthetic. London 1924. pp. xii + 182. ill. 25*s.* net. (*Recd.* 4/2/24.)

From the Publishers: Messrs. Ernest Benn.

ORGANIC SYNTHESES: an annual publication of satisfactory methods for the preparation of organic chemicals. Vol. III. Edited by HANS THACHER CLARKE [and others]. New York 1923. pp. vi + 104. ill. 7*s.* 6*d.* net. (*Recd.* 24/1/24.)

From the London Publishers: Messrs. Chapman & Hall.

RAIZISS, GEORGE W., and GAVRON, JOSEPH L. Organic arsenical compounds. New York 1923. pp. 570. $7 net. (*Recd.* 23/1/24.)

From the Publishers: The Chemical Catalog Company, Inc.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

MEETING held in the Lecture Hall of the Institution of Mechanical Engineers, on Thursday, February 28th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

Professor J. Joly, F.R.S., delivered the Hugo Müller Lecture, entitled: "The Radioactivity of the Rocks." A vote of thanks to the Lecturer, proposed by Professor H. B. Dixon, F.R.S., and seconded by Dr. A. S. Russell, was carried with acclamation, Professor Joly making acknowledgment.

Ordinary Scientific Meeting, Thursday, March 6th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Ernst Bentz	Dec. 4th, 1890.	Feb. 20th, 1924.
Albert Francis Wenger	Dec. 6th, 1917.	Feb. 25th, 1924.

The following List of Nominations for vacant places on the Council was read from the Chair:

Secretary.—C. S. Gibson.

Vice-Presidents who have filled the office of President (two vacancies).—Sir James J. Dobbie; W. H. Perkin.

Vice-Presidents who have not filled the office of President (two vacancies).—A. J. Greenaway; James C. Philip.

Ordinary Members of Council: (*a*) Town Members, that is, those resident within 50 miles of Charing Cross (three vacancies).—O. L. Brady; A. E. Dunstan; T. S. Moore. (*b*) Country Members, that is, those resident beyond 50 miles from Charing Cross (three vacancies).—D. R. Boyd; B. Lambert; F. L. Pyman.

The following were formally admitted Fellows of the Chemical

Society: G. D. Crosley, E. R. Levy, S. I. Levy, M. L. Smith, and F. A. Williams.

Certificates were read for the first time in favour of:

Ernest George Churchill, M.Sc., A.I.C., 66, Victoria Avenue, East Ham, E. 6.
Thomas Henry Hamnett, 1, Belmont Road, Clapham, S.W. 4.
Dudley Jenkin, 9, Fenchurch Street, E.C. 3.
Jessie Mary Landon, B.Sc., 59, Tressillian Road, St. John's, S.E. 4.
Douglas McKie, B.Sc., 59, Dartmouth Park Hill, N.W. 5.
Frank Bertram Phillips, B.Sc., 64, Airedale Avenue, Chiswick, W. 4.
Bodh Raj Sobti, M.Sc., Scindia Chemical Laboratories, Gwalior, India.
George Watson Young, B.Sc., 97, Stockton Road, West Hartlepool.

The following papers were read:

"The reaction between lime and nitrogen peroxide." By J. R. Partington and F. A. Williams.

"Tellurium monoxide." By J. J. Doolan and J. R. Partington.

"The isomerism of the oximes. Part XVII. The action of 2 : 4-dinitro-chlorobenzene on some isomeric aldoximes." By O. L. Brady and R. Truszkowski.

"The dimorphism of diphenylarsenious chloride (diphenylchloroarsine)." By C. S. Gibson and (the late) D. C. Vining.

Ordinary Scientific Meeting, Thursday, March 20th, 1924, at 8 p.m., Professor W. P. Wynne, D.Sc., F.R.S., President, in the Chair.

The President referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Chichester Alexander Bell	Dec. 2nd, 1886.	March 11th,
George Henry Hughes	June 17th, 1880.	March 16th.

The President announced:

1. That the Council had sealed the following Address of Congratulation which had been presented that day to the Physical Society of London on the celebration of its Jubilee:

> "In the name of the Chemical Society we offer to the Physical Society the warmest congratulations upon the completion of an half-century of devotion to that science which both have the honour to serve.
>
> "In the long task of probing the inward mechanisms of matter; in resolving matter, stage by stage, into bodily objects of ever-smaller scale and ever-wider universality, the two sister sciences labour and have so long laboured in unison, that their purposes can justly be called one and the same.
>
> "The help received by the one branch in any generation is

repaid to the other in the next: chemistry revealed the atom, and, if it suggested the molecule, physics made actual the ideal; when physics had laid down the canons of energy, chemistry used them to find the ion; physics discovered the electron in which is sought the origin of the action of chemical valency; when chemistry had classified the elementary atoms physics was soon to offer a clue to the rhythms thus perceived, and, by means of that even coupling of abstract theory with concrete experiment in which British physics has no rival, to make the profoundest analysis yet achieved of the intimate structure of matter and the interactions of its finest parts.

"It is the strong hope of British chemists that the marriage of their endeavours with those of the physicists—a union never happier than now—may find expression and sustenance in the closest companionship between the Chemical Society and the Physical Society, the attainment of whose Jubilee is a rich source of satisfaction to the scientific world.

"Signed on behalf of the Council of
The Chemical Society.

W. P. WYNNE, *President.*
J. F. THORPE, *Treasurer.*
L.S. IRVINE MASSON, JAMES C. PHILIP, } *Secretaries.*
ARTHUR W. CROSSLEY, *Foreign Secretary.*

"Sealed in Council this Twentieth day of March, One thousand nine hundred and twenty-four."

2. That the Faraday Lecture will be delivered by Professor R. A. Millikan, at the Royal Institution, Albemarle Street, W. 1., on Thursday, June 12th, 1924, at 8.30 p.m., instead of June 26th as previously announced.

The following were formally admitted Fellows of the Chemical Society: R. P. Hobson and J. R. Park.

Certificates were read for the first time in favour of:

Allah Bakhsh, M.A., B.Sc., Muslim University, Aligarh, India.
Charles Montague Bere, B.Sc., Cockhaynes, Silverton, Exeter.
Wilfrid Henry Edwards, Imperial College of Science, S. Kensington, S.W. 7.
George Hagues, B.Sc., A.I.C., 54, White Street, Hull.
John William Humpleby, 6, Leader Williams Road, Irlam, Manchester.
James Pickett Laurie, 65, Parchment Street, Winchester.
Edith Morrison, B.Sc., 27, Lilley Road, Fairfield, Liverpool.
Binay Chandra Mukerjee, M.Sc., Office of Metallurgical Inspector, Jamshedpur, India.
Ronald Charles Odams, B.A., 28, Milton Road, Cambridge.
William John Watkins, 49, Hazelwood Road, Northampton.
Walter Ambrose Woodrow, 8, Berkeley Road, Manor Park, E.

The following papers were read :

"The action of thionyl chloride on alizarin. A correction." By A. GREEN.

"Rotatory dispersion of derivatives of tartaric acid. Part I. Methylene derivatives." By P. C. AUSTIN and V. A. CARPENTER.

"The rotatory dispersive power of organic compounds. Part XV. The molecular weight of ethyl tartrate and the origin of anomalous rotatory dispersion in tartaric acid and its derivatives." By T. M. LOWRY and J. O. CUTTER.

"The heat of adsorption of oxygen by charcoal." By E. A. BLENCH and W. E. GARNER.

"Ring-chain tautomerism. Part X. Inhibited tautomerism." By F. DICKENS, L. HORTON, and J. F. THORPE.

REPORTS ON THE PROGRESS OF APPLIED CHEMISTRY.

(Issued by the Society of Chemical Industry.)

The Society of Chemical Industry has offered to supply the Reports on the Progress of Applied Chemistry for 1923 to Fellows of the Chemical Society, who are not Members of the Society of Chemical Industry, at the reduced price of 10*s*.

Orders, with remittance, should be sent to Dr. J. P. Longstaff, Secretary, Society of Chemical Industry, 46 and 47, Finsbury Square, London, E.C. 2.

List of papers, or Abstracts thereof, received between February 22nd, and March 20th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Tautomerism in the malonic acid and pyruvic acid series: evidence for the hydrazone structure of the tautomers." By H. R. STEVENS and F. W. WARD.

"The isomerism of the oximes. Part XVIII. Some bromo- and nitro-substituted mono- and di-methoxybenzaldoximes." By O. L. BRADY and L. B. MANJUNATH.

"The kinetics of sucrose inversion." By S. W. PENNYCUICK.

"The sulphonation of meta-dinitrobenzene." By R. H. GRIFFITH.

"The nitration of para-bromoacetanilide." By R. H. GRIFFITH.

"Sedimentation of bentonite." By H. F. COWARD.

"Note on the photochemical inversion of sucrose by short infra-red radiation." By W. H. GARRETT, P. S. LEWIS, and A. I. ESCOLME.

"The photochemistry of the halogen hydrides." By E. J. Bowen.
"The first law of photochemistry." By M. C. C. Chapman.
"Polarity effects in aromatic halogen compounds." By J. B. Shoesmith, A. C. Hetherington, and R. H. Slater.
"Studies in the anthracene series. Part X." By E. de B. Barnett and M. A. Matthews.
"The dissociation pressures of hydrated double sulphates. Part II. Various double sulphates of the type $M_2SO_4,M_2SO_4,6H_2O$." By R. M. Caven and J. Ferguson.
"The tolyl esters of orthoformic acid." By J. E. Driver.
"A new method of micro-gas analysis." By L. Reeve.
"Sugar carbonates and their derivatives. Part I." By C. F. Allpress and W. N. Haworth.
"The explanation of chemical phenomena by the magnetic hypothesis." By W. E. J. Trask.
"The bromine compounds of phenanthrene. Part III." By H. Henstock.
"Condensation of acetylene and hydrogen sulphide in presence of catalysts." By M. G. Tomkinson.
"Nitrogen chlorides derived from nitro-substituted acetanilides." By F. D. Chattaway and H. J. Dowden.
"Colour and molecular geometry. Part II. Explanation of the results of Chattaway and Clemo." By J. Moir.
"The influence of the orientation of surface molecules on the surface tension of pure liquids." By S. Sugden.
"A relation between surface tension, density and chemical composition." By S. Sugden.
"Researches on residual affinity and co-ordination. Part XVIII. Interaction of zirconium salts and β-diketones." By G. T. Morgan and A. R. Bowen.
"Researches on residual affinity and co-ordination. Part XIX. Interaction of germanium tetrahalides and β-diketones." By G. T. Morgan and H. D. K. Drew.
"Studies on thallium compounds. Part III. The thallous-thallic halides." By A. J. Berry.
"Action of selenium tetrachloride on di- and tri-ketones. Selenium phenylacetyl- and phenylpropionyl-acetones." By G. T. Morgan and C. R. Porter.
"The relation between the crystal structure and the constitution of carbon compounds. Part II. Crystallography of some further simple substitution products of methane." By I. E. Knaggs.
"The periodic catalytic decomposition of hydrogen peroxide." By E. S. Hedges and J. E. Myers.

"The action between bromine and malonic acid in aqueous solution." By R. W. WEST.

"Experiments on the rate of photochemical change in the solid state." By E. J. BOWEN, H. B. HARTLEY, W. D. SCOTT, and H. G. WATTS.

"The sulphonation of *m*-cresol and its methyl ether." By R. D. HAWORTH, A. LAPWORTH, and [in part] M. L. WILSON.

"A substitute for sodium light in refractometric measurements." By J. K. MARSH.

"The properties of ammonium nitrate. Part VIII. Analysis of crystalline deposits from solution in fused ammonium nitrate." By E. P. PERMAN and D. R. DAWKINS.

"The chemistry of Posidonia fibre. Part II. The cellulose." By J. C. EARL.

"The rotatory dispersive power of organic compounds. Part XIV. Sulphonic derivatives of camphor." By E. M. RICHARDS.

"The synthesis of an azocyanine." By F. M. HAMER.

"Chromammine salts of the nitro-dyes and of other colouring matters." By H. J. S. KING.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 1ST, 1924.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

BAKHSH, ALLAH, M.A., B.Sc., Muslim University, Aligarh, India. British Indian. Reader in Chemistry and Chairman of the Department of Studies in Chemistry, Muslim University, Aligarh, India. Took B.Sc. degree of the Allahabad University in 1904, and M.A. degree in Chemistry of the same University in 1906. Worked as an Assistant Professor of Chemistry in the late M.A.O. College, Aligarh, from October 1908, till 30th November, 1920, when the said College was raised to the status of a University under the title of Muslim University, Aligarh, by Act XL of 1920 of the Government of British India, and from 1st December, 1920 I have been appointed a Reader in Chemistry of the Muslim University, Aligarh, and was elected Chairman of the Department of Studies in Chemistry in 1921. Thus I have been engaged in teaching for the last 15 years. (*Signed by*) Qasim Ali Mansuri, Hans Krall, N. R. Dhar.

BANERJEE, PROFULLA KUMAR, 37/1 Kasimitter's Ghat Street, Calcutta, India. Bengalee. Managing Proprietor of the East India Chemical Works Co., Barnagore (Bengal), India. Engaged in manufacturing pharmaceutical and technical chemicals since 1911. In charge of the factory of the East India Chemical Works, Barnagore, near Calcutta, for seven years. Managing Proprietor of the East India Chemical Works since 1922. Desirous of joining

the Chemical Society as a Fellow with the object of keeping in touch with the advancement of Chemistry. (*Signed by*) Anu Ghose, T. K. Ghose, B. N. Maitra, K. B. Sen.

BARNETT, JOHN, 111, Kingsley Avenue, West Ealing, W. 13. British. Student for 3 years at the East London College (University of London). Passed A.I.C. exam. in General Chemistry, July, 1923. Passed B.Sc. (Lond.), 1st Class Honours Chemistry, 1923. (*Signed by*) A. T. Healey, W. G. Shilling, Eustace E. Turner, W. H. Patterson, J. R. Partington, Frank W. Bury.

BERE, CHARLES MONTAGUE, Cockhaynes, Silverton, near Exeter. British. Research Student. B.Sc. 1st Class Hons. in Chemistry (London) after the recognised course at King's College, 1922. Since then engaged in research in Organic Chemistry at King's College. (*Signed by*) Samuel Smiles, A. J. Allmand, H. W. Cremer.

BIRCHENOUGH, WILSON, 47, Petworth Road, Friern Barnet, London, N. 12. British. Science Master in a Central School. B.Sc. degree (London University) in Chemistry, Physics and Mathematics. Chief Analytical Chemist and Instructor in Steel Analysis at Eagle Works, Sheffield, for six years. Science Master in Woodhouse Central School, N. Finchley. (*Signed by*) T. A. Quilliam, G. M. Norman, F. S. Kipping.

BURGESS, MAURICE JOHN, 48, Sandford Grove Rd., Nether Edge, Sheffield. English. Research Chemist. Research on coal and gaseous inflammation under Mining Association and Home Office. Published jointly with Prof. R. V. Wheeler papers in the Journal of the Chemical Society on coal and gas researches. Engaged on research for Safety in Mines Research Board. (*Signed by*) R. V. Wheeler, H. F. Coward, F. V. Tideswell, W. Payman.

CHURCHILL, ERNEST GEORGE, 66, Victoria Avenue, East Ham, E. 6. British. Schoolmaster. M.Sc. (Sheffield), A.I.C. Student Demonstrator in Chemistry at the University of Sheffield, 1920–21. Demonstrator, Chemistry Dept., East Ham Technical College. (*Signed by*) W. H. Barker, W. T. Clough, E. D. Griffiths.

CRAMP, ALFRED CECIL, Palmer's School, Grays, Essex. English. Chemistry Master. (1) (1918–1920) Two years as student in Electrical Engineering Dept. (including Chemistry and Metallurgy) at City and Guilds Technical College, Finsbury. (2) (1920–1923) Three years at Palmer's School as Chemistry Master. (3) Studying for London University Degree in Chemistry. (*Signed by*) E. W. J. Neave, H. W. V. Player, G. Polglaze.

DYE, AUBREY WILSON, "Invertiel," Martin Road, Centennial Park, Sydney, N.S.W., Australia. English, born Aldershot, Hampshire, 1885. Metallurgist, Technological Chemist, etc. Business Address—c/o A. W. Dye Limited, 219, Elizabeth Street, Sydney, N.S.W., Australia. Managing Director, A. W. Dye Limited, Bullion Melters, Smelters, Refiners, Manufacturing Chemists, etc. Was for several years in charge of Assay Laboratory of Johnson & Sons, Smelting Works, Limited, later in charge of Laboratory of Harrington's Limited, photographic merchants of Sydney, N.S.W.; since 1914 established and practising on own account. Appointed Assay Master in New South Wales for the Hall Marking of Jewellery. Lecturer on Photographic Chemistry, Dental Metallurgy, etc. (*Signed by*) Edgar A. Rayner, Arthur J. Chapman, Alex. W. Bain.

EDWARDS, WILFRID HENRY, Mauritius. British. Scientific Assistant at the Department of Agriculture of Mauritius. Now on special leave as research student in Entomology at the Imperial College. Laureate of the College of Agriculture of Mauritius, at which I obtained the Diploma in Agricultural Chemistry. Did research in sugar house chemistry and pub-

lished a paper on the exhaustion of sugar from molasses in the "Journal Agricole" (Mauritius). (*Signed by*) James C. Philip, J. W. Hinchley, H. B. Baker.

ETRIDGE, JOSEPH JOHN, 24, Lynmouth Rd., Stamford Hill, N. 16. British. Chemist. B.Sc., London, 2nd Hons. Chemistry, 1922. Assistant chemist to Messrs. W. J. Bush & Co. (1918–22). Chemist to Messrs. J. Manger & Sons (1923–). (*Signed by*) George Senter, Samuel Sugden, Wm. W. Myddleton.

EWART, FREDERICK KENNETH, Exeter College, Oxford. British by birth. Student. Science Scholar (Open), Exeter College, June, 1920. B.A. (Chemistry, Pt. I), July, 1923. President, Oxford University Junior Scientific Club, 1923. At present researching in the Balliol and Trinity Laboratory. (*Signed by*) H. R. Raikes, John Rankin, E. N. Allott, H. Hartley, C. N. Hinshelwood, E. J. Bowen.

FIRTH, HERBERT, Poplar Cottage, Scholes, Cleckheaton, Yorks. British. Student, Bradford Technical College. Registered Student, Institute of Chemistry, in last year of training. Engaged on research. Had 5 years' experience as assistant to Analytical Chemist. Reasons for desiring membership, (1) use of the Library, (2) to keep up to date with advances in the Science. (*Signed by*) T. W. Price, Robt. D. Abell, Barker North.

GILLMAN, PERCY, B.Sc. (Vict. Univ. of Manchester), Oakmount School, Arnside, Westmorland. British. Schoolmaster and Science Master. Principal of Oakmount Boarding School, Arnside, Westmorland. 4½ Years Senior Science Master, Royal Grammar School, Lancaster (organised the science work for boys taking O. and C. Higher Certif. Exams. and University Entrance Scholarships). 11 Years in charge of Science Laboratory, Technical School, Storey Institute, Lancaster At present having charge of Chemistry Classes of recognised (1) Pharmaceutical Course, at Technical School, Lancaster, (2) Chemical Trades Courses, at Technical School, Lancaster. (*Signed by*) G. Walker, E. H. Holden, William French.

GINDI, FOAD MIKHAIL, Cairo, Egypt. Egyptian. University Student. Agricultural Chemist, Ministry of Agriculture, Egypt. Passed the final B.Sc. taking Chemistry as principal subject in Birmingham University in June 1923, and working for the B.Sc. Honours in Biochemistry. (*Signed by*) Arthur R. Ling, G. T. Morgan, E. Ashley Cooper.

HAGUES, GEORGE, 54, White St., Hull. British. Analytical Chemist. B.Sc. (Leeds) Hons. Chemistry. A.I.C. (*Signed by*) John Stanley Carter, Edward Johnson Wayne, Edgar Rhodes.

HAMNETT, THOMAS HENRY, 1, Belmont Rd., Clapham, S.W. 4. British. Chemist. (i) Studied Chemistry under my father, T. Hamnett, Chemist, for many years. (ii) Studied Chemistry, Physics, Botany, and Pharmacy under H. Wootton, B.Sc., and Chas. Gosling, Ph.C., at the London College of Chemistry, Clapham Rd., where I passed out with First Class Certificates in each of the specified subjects, including Practical and Theoretical, Organic and Inorganic Chemistry. A considerable period was spent in Qualitative and Quantitative Analysis, Alkaloidal Assays, etc. (iii) Manager for A. H. Wardle, Ph.C., for an extensive period. (iv) Manager for Heppells, Chemists, at the following branches—164, Piccadilly, 26, Piccadilly, 9, Bloomsbury Street. At the present time my position is Manager of Heppells, Chemists, 35, Haymarket. (*Signed by*) Frank Radcliffe, Thos. R. Owles, S. Gray Fenton.

HARRY, HUBERT TEARE, Northleigh, Tywardreath, Par Station, Cornwall. British. Member of the Teaching Profession (Science Master). Com-

pleted a 3 years' course of study in the Faculty of Science at Bristol University. B.Sc. (pass) obtained in June, 1923. (Chemistry taken as a final subject in this examination.) As a Science Master, I am desirous of keeping in touch with modern developments in Chemistry. (*Signed by*) F. Francis, J. W. McBain, M. E. Laing.

HODGES, FRANCIS WILLIAM, 30, Forest Rd., Kew, Surrey. English. Science Master at the Cooper's Co. School, Bow, E. B.Sc., London University. Teacher of Chemistry since 1899. Part author of "Chemistry and Physics for Indian Students" and "Chemistry and Physics for Middle Forms," Gregory, Simmonds, and Hodges. Research student, London University. (*Signed by*) Francis Arnall, Frank Matthews, J. C. Crocker.

HOGG, JOHN ALEXANDER, Burston House, Pittville Circus, Cheltenham. British. Pharmaceutical Chemist. Chief Chemist to United Chemists Association, Ltd. Formerly Works Manager to Lysol Ltd., Raynes Park. For many years Works Chemist with Messrs. Burroughs, Wellcome & Co., Boots Pure Drug Co., Ltd., etc. (*Signed by*) H. G. Tribley, H. C. Sayer, F. Stanley Clarke.

HORTON, HAROLD VIVIAN, 9, Brambledown Road, Wallington, Surrey. British. Chemist. Government Laboratory (from Feb. 25th, 1924). University College, London, Jan. 1919–Sept. 1923. B.Sc., 2nd Class Hons., Chemistry, 1921. A.I.C., Feb. 1922. Dec. 1921–Sept. 1923, Research at University College in Organic Chemistry. (*Signed by*) H. J. Evans, Henry Terrey, J. N. E. Day.

HUMPLEBY, JOHN WILLIAM, 6, Leader Williams Rd., Irlam, Manchester. British. Chief Chemist and Chief Assistant to the Coke Ovens Manager. 8 Years as junior assistant in the laboratory of the Coal Distillation Co.'s Coke Ovens and By-product Plant at Port Clarence, co. Durham, under J. A. Roelofsen, Ph.D.; 4½ years manager of the Crude Benzol Recovery and Rectification Plant at Clay Cross, nr. Chesterfield; 2 years manager of the By-product Plant at Port Clarence; 5 years as Chief Chemist and Assistant Manager at the Coke Oven and By-product Plant of the Portington Steel and Iron Co., Ltd., Irlam, Manchester. (*Signed by*) J. J. Morgan, E. Bayley, Frank B. Small.

INNES, JOHN, c/o Gray, 1, Trinity Street, Hawick. British. Science Master. B.Sc. (Edin.) in Chemistry. Teacher of Textile Science in Hawick Technical Institute, for students in the dyeing, etc., branches of industrial chemistry. It is desired to keep in touch with current chemical literature. (*Signed by*) James Walker, J. A. McKerrow, Sydney A. Kay, Arthur A. Hoskings.

JENKIN, DUDLEY, 9, Fenchurch St., E.C. 3. British. Staff of large importers and distributors of American Lubricating Oils (Scientific Dept.). Scientific Education at Merchant Taylors and Mercers Schools, London. Detailed study of Hydrocarbon Oils in London, Paris, Brussels, and Zurich under well-known authorities. During the war experience in transport of crude oil by admiralty tankers in Trinidad oil fields. At present studying at Sir J. Cass Technical Institute (evening), and also occassionally deliver voluntary lectures on various chemical subjects. (*Signed by*) W. H. Simmons, F. H. Lowe, E. J. Lush.

KHANNA, RAM CHANDRA, B.Sc., Multan City, India. Aryan. Teacher in a School. Second Master, Khalsa A. V. School, Lyallpur City, India. Bachelor of Science, Punjab University. (*Signed by*) N. A. Yajnik, E. T. Dean, V. S. Puri.

KLEIN, LOUIS, 44, Downs Park Rd., Hackney, London, E. 8. British.

Student. University Scholarship in Chemistry, 1921. B.Sc. Hons. Chemistry, 1921. Teacher's Diploma, 1923. Research in Chemistry at University College under Dr. O. L. Brady, 1921–22, 1923–24. (*Signed by*) O. L. Brady, J. N. Collie, J. N. E. Day.

LANDON, JESSIE MARY I., 59, Tressillian Road, St. John's, S.E. 4. British. Science Mistress, High School, Sleaford, Lincs. B.Sc. London University. Advanced Course in Chemistry at the Royal College of Science, South Kensington. Intermediate Exam. of the Institute of Chemistry. Fellow of the Royal Horticultural Society. (*Signed by*) William A. Tilden, Alfred Smetham, James C. Philip.

LAURIE, JAMES PICKETT, 8, Lea Bridge Rd., Clapton, E. 5. British. Assistant Chemist. Three and a half years assistant chemist to Messrs. Baird and Tatlock (Ldn.), Ltd. Six months Second Chemist Colne Valley Water Co., Watford. At present Second Assistant in Science School, Winchester College. (*Signed by*) B. Adams, L. R. B. Pearce, J. A. Williamson, F. W. Goddard.

MCKIE, DOUGLAS, 23, North Avenue, Tredegar, Monmouthshire; London address, 59, Dartmouth Park Hill, N.W. 5. British. Research Student in Chemistry at University College, London. 1920–1923, Student in Honours Chemistry Course at University College, London. 1923 (Oct.) B.Sc. University of London. 1st Class Honours in Chemistry. 1923 (Oct.) to date, Research student at University College, London. (*Signed by*) J. N. Collie, F. G. Donnan, Irvine Masson.

MALSBURY, JOSEPH, 6, Gordon Rd., Weston-s.-Mare. British. Works Chemist. *Training.*—8 Years at Weston-s.-Mare School of Science and Art under E. T. H. Bucknell, Esq., F.C.S. *Examination.*—Inter. B.Sc. (London) in Chemistry, Mechanics, Physics, Maths. Now working for B.Sc. (Honours) in Chemistry (London). *Works Experience.*—With Weston-s.-Mare Gaslight Co., April 1918–Nov. 1919, Assistant Chemist, Nov. 1919 to date, Works Chemist. (*Signed by*) E. T. H. Bucknell, L. W. Raymond, Jos. Harger Pye.

MAXTED, GODFREY VINCENT JOHN, Elloughton, Brough, East Yorkshire. British. Of the firm of Consulting Engineers, Maxted & Knott, Ltd., Hull and London, which deals chiefly in the Cement Industry. B.A. Cantab. (*Signed by*) F. C. Ray, A. J. Berry, J. C. Mellersh, D. B. Butler, Geo. H. Appleyard, Frank S. Wood, Wm. H. Woodcock.

MORRISON, EDITH, 27, Lilley Road, Fairfield, Liverpool. British. Student. 1st Class Hons., B.Sc., Chemistry, Liverpool, 1922. (*Signed by*) E. C. C. Baly, I. M. Heilbron, W. C. M. Lewis.

MUKERJEE, BINAY CHANDRA, Jamshedpur, India. Bengalee, Hindu. Chief Chemist, Office of the Metallurgical Inspector, Jamshedpur, India. Master of Science (Chemistry), Calcutta University. (1) Formerly Assistant Chemist, The Central Provinces Prospecting Syndicate, Ltd.; Senior Chemist, Rangoon Pharmaceutical and Chemical Works, Rangoon; Assistant Chemist, Government Technical Laboratory, Dept. of Industries, United Provinces. (2) Joint author of "Rose Otto from Rose Flower (*Rosa Damascena*) of the United Provinces," published in the Journal of Indian Industries and Labour, February 1922, Vol. II, Part I; also worked on "Investigation of Teak Dye from Teak Leaves" (Bulletin of Indian Industries and Labour, No. 13). (3) Now Chief Chemist, office of the Metallurgical Inspector, Jamshedpur. (*Signed by*) J. N. Mukherjee, S. N. Sen, K. G. Naik.

ODAMS, RONALD CHARLES, 28, Milton Road, Cambridge. British. Assistant Chemist. 1st Class Honours in Chemistry, Part II, Nat. Sci. Tripos, Cambridge University, 1921. Engaged in research work in Organic

Chemistry at the above University for the last two years and at present with the Asiatic Petroleum Company. (*Signed by*) W. J. Pope, W. H. Mills, G. N. Nicklin.

PHILLIPS, FRANK BERTRAM, 64, Airedale Avenue, Chiswick, W. 4. British. Student. Graduate of University of London, 1st Class Honours in Chemistry. Desirous of receiving Journal and attending lectures, etc. (*Signed by*) Samuel Sugden, Ernest Augustus Doncaster, Robert Ernest Machin, George Senter.

PRITCHETT, ERIC GEORGE KEMP, 5, Willows Crescent, Cannon Hill, Birmingham. British. Analytical Chemist. Intermediate B.Sc. (London), 1923. 5½ Years works laboratory experience. (*Signed by*) W. A. S. Calder, John G. Clarke, Archibald O. Jones.

RANDALL, FREDERICK CHARLES, 10, Beauchamp Avenue, Leamington Spa. British. Temporary Assistant Chemist, Government Laboratory. M.Sc. Lond., A.I.C. Two years' research work at University College, London, after degree course. (*Signed by*) J. J. Fox, W. E. Garner, Allan E. Mitchell.

ROBERTS, ARCHIBALD LEWIS, 4, Victoria Street, Shrewsbury. British. Works Chemist, "Sentinel" Waggon Works, Ltd., Shrewsbury. Teacher of Chemistry, Borough Technical School, Shrewsbury, since 1916. It is desired to make use of the C.S. Library, also for research in Ferrous and Non-ferrous Analysis. (*Signed by*) Thos. P. Blunt, Herbert Henstock, D. C. Jones, *W. H. Pendlebury.*

ROBERTS, THOMAS, 17, Earle St., Wrexham. British. Metallurgical Chemist and Metallographist to Messrs. The Brymbo Steel Co., Ltd., Wrexham. 15 Years Assistant Chemist. 5 Years Chief Chemist and Metallographist. (*Signed by*) E. Escott Wood, H. Procter Smith, C. W. Mobberley.

SEAL, RALPH JOHN, 14, Woodend, Sutton, Surrey. British. Lecturer, Finsbury Technical College. 1921–1923, Research Chemist, Brentford Gas Coy. Associate of the City and Guilds of London Inst., Finsbury College. A.I.C., B.Sc. (London). (*Signed by*) H. M. Atkinson, A. J. Hale, J. E. B. Price.

SMITH, IAN CHARLES PARK, 6, Dermody Gardens, Lewisham, S.E. 13. British. Laboratory Assistant in the Manufacture of Organic Chemicals at the British Drug Houses. Part-time student at Birkbeck College, reading for the B.Sc. Exam., Hons. Chemistry. (*Signed by*) Francis H. Carr, Samuel Sugden, George Senter.

SOBTI, BODH RAJ, M.Sc., Gujerat (Punjab), India. Indian. Research Chemist, Scindia Chemical Laboratories, Gwalior State (India). (*a*) M.Sc. of the Punjab University; (*b*) Working in the Scindia Chemical Laboratories as Research Chemist for about three years; (*c*) Papers contributed: (1) Perfumery and Essential Oil Record, Nov. 20, 1923, "Phenols in Ajowen Oil"; (2) The Journal of the American Chemical Society, Dec. 1923, "The Molecular Conductivity of Potassium Iodide in Epichlorohydrin." (*Signed by*) N. A. Yajnik, Edwin Theodore Dean, V. S. Puri.

SWAIN, CHARLES MANSFIELD, 6, High Street, Langley, Birmingham. British. Analytical Chemist. Higher Board of Education (Chemistry), 1918. London University Matriculation, 1923. 9 Years' works laboratory experience. (*Signed by*) W. A. S. Calder, John G. Clarke, Archibald O. Jones.

WATKINS, WILLIAM JOHN, 49, Hazelwood Rd., Northampton. British. Head Brewer, Northampton Brewery Co., Ltd., Bridge St., Northampton. I desire admission to the Chemical Society so that I may keep in close touch with the advances in Chemistry, both General and Analytical, and Bacteriology.

Two years' training in chemistry under Mr. Frank Faulkner, The Laboratory, Bath Row, Birmingham. (*Signed by*) Horace T. Brown, Harold Heron, Henry F. Everard Hulton.

WILLIAMS, JOSEPH HUGHES, B.Sc. (Lond.), 31, Salt Avenue, Stafford. British. Works Chemist to the English Electric Co., Ltd., Siemens Works, Stafford. Assistant Chemist to Messrs. E. Riley & Harbord, London, till 1914. Assistant Chemist, Scientific and Technical Research Dept., Imperial Institute, S. Kensington, London (1915–1918). Works Chemist to Siemens Bros. Dynamo Works, now The English Electric Co., Siemens Works, Stafford (1918 to date). Lecturer in Organic Chemistry, Wolverhampton Technical School (1920 to date). (*Signed by*) T. A. Henry, Thos. J. Murray, J. H. Wood.

WINDLE, FRANK BERESFORD, 16, Perryn Rd., Acton, W. 3. British. Research Assistant to Chemical Warfare Committee. 4 Years' experience as assistant in the Analytical Lab. of Messrs. Wright, Layman & Umney, Ltd., Wholesale Chemists. Assistant to Prof. C. S. Gibson, O.B.E., M.A., Chemical Dept., Guy's Hospital Medical School. Studying for Hons. B.Sc. at Birkbeck College, University of London. (*Signed by*) Charles S. Gibson, G. M. Bennett, H. C. Bell, H. Burton.

WOODROW, WALTER AMBROSE, 8, Berkeley Road, Manor Park, E. 12. English. Chemist in Charge. Am at present in charge of Laboratory of Anglo-American Oil Co., Ltd., 36, Queen Anne's Gate, Westminster. Member of Standardization Committee of Petroleum Technologists. Member of the Institute of Petroleum Technologists. Student of Pure Chemistry (pre-war and post-war) at East Ham Technical Institute. (*Signed by*) A. E. Dunstan, F. B. Thole, F. G. P. Remfry, S. J. M. Auld.

YOUNG, GEORGE WATSON, 97, Stockton Road, West Hartlepool. British. Chief Chemistry Master, West H'pool Secondary School. B.Sc. Durham (Chemistry chief subject), 1913. Certificated and Registered Teacher. Chemistry master at above school, 1916 to present time except for break, July 1918–Easter 1919 (Army Education Scheme in France), Easter 1919–to July 1920 (Science Master, Queen Elizabeth Grammar School, Yarm, Yorks). (*Signed by*) D. Arthur Ruell, Birkett Wylam, J. A. Smythe.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

BUTLER, FREDERICK WILLIAM WEBB, 8, Forest Rd., Bulwer Park, Durban, Natal, S.A. British. Works Chemist. Messrs. The Natal Soap Works, Durban. National Technical Certificate (distinction), Union Dept. of Education. National Advanced Certificate (distinction), Union Dept of Education. 4 Years student at the Natal Technical College, latterly as a part-time student. 3 Years Chemist at The Natal Soap Works, Ltd. I wish to keep in touch with recent advances of Pure Chemistry. (*Signed by*) E. Halm, C. D. Golding, *James Moir.*

KON, STANISLAW KAZIMIERZ, ul. Piekna 41 m. 6, Warsaw, Poland. Polish. Research Chemist. Ph.D. (Warsaw University), 1923. Has published a paper (jointly with Jablczynski) on the "Accurate Determination of Boiling-point Elevation" (Trans., 1923, November). (*Signed by*) G. A. R. Kon.

PAUL, PRAMATHA NATH, Ramtek P.O., C.P., India. Bengalee, Indian. Assistant Chemist to the C.P. Prospecting Syndicate, Ltd. B.Sc. of the Calcutta University (India), knows manufacturing of Sulphuric Acid, the operation of the Recovery Coking Plant, the Technical Analysis of Metals, Alloys, Ores, Minerals, Waters, Gases, Foods, etc. (*Signed by*) K. G. Naik, A. C. Bose, *M. J. Gajjar.*

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ACTUALITÉS DE CHIMIE CONTEMPORAINE. Publiées sous la direction de A. HALLER. 2nd series. Paris 1924. pp. viii + 310. ill. 12 *fr.* net. (*Recd.* 27/2/24.)

From the Publisher : M. Gaston Doin.

CHINA CLAY TRADE REVIEW : the official organ of the china clay industry. London 1923 +. [Supplement to *The Chemical Age.*]

From the Publishers : Messrs. Benn Brothers.

EASTMAN KODAK COMPANY. Abridged scientific publications from the Research Laboratory. Vol. VI, 1922. Rochester, N.Y., 1923. pp. 238 + viii. ill. (*Reference.*)

From the Eastman Kodak Company.

INSTITUTION OF MECHANICAL ENGINEERS. Proceedings. 1924, etc., London 1924 +. (*Reference.*) From the Institution.

LUNGE, GEORGE, and KEANE, CHARLES ALEXANDER. Technical methods of chemical analysis. 2nd edition. Edited by CHARLES ALEXANDER KEANE and PERCY CYRIL LESLEY THORNE. Vol. I. London 1924. pp. xx + 702. ill. (*Reference.*) 63*s.* net.

From the Publishers : Messrs. Gurney & Jackson.

II. *By Purchase.*

AMERICAN CERAMIC SOCIETY. Bulletin : a monthly publication devoted to Proceedings of the Society, discussions of plant problems, discussions of technical and scientific questions and promotion of coöperative research. Vol. I, etc. Easton, Pa., 1922 +. (*Reference.*)

—— Ceramic Abstracts. Vol. I, etc. Easton, Pa., 1922 +. (*Reference.*)

BORNEMANN, F. Kohlensäure und Pflanzenwachstum. 2nd edition. Berlin 1923. pp. 138. ill. (*Recd.* 4/2/24).

CHEMIE EN INDUSTRIE : Bijblad van het Chemisch Weekblad. Year I, etc. Amsterdam 1923 +. (*Reference.*)

CONGRÈS INTERNATIONAL DES COMBUSTIBLES LIQUIDES. Compte rendu, etc. Paris 1923. pp. 851. ill. (*Reference.*)

EDEL-ERDEN UND -ERZE. Zeitschrift für das Gesamtgebiet der seltenen Erden und Erze, für die Industrie ihrer Gewinnung, Verarbeitung, und Verwertung. Year I, etc. München 1919 +. (*Reference.*)

EWALD, P. P. Kristalle und Röntgenstrahlen. Berlin 1923. pp. x + 328. ill. (*Recd.* 11/2/24.)

FEULGEN, R. Chemie und Physiologie der Nukleinstoffe nebst Einführung in die Chemie der Purinkörper. Mit einem Sonderkapitel "Die Pathologie des Purinstoffwechsels" von FRIEDA FEULGEN-BRAUNS. (Biochemie in Einzeldarstellungen. V). Berlin 1923. pp. xii + 432. ill. (*Recd.* 27/2/24.)

FRIEND, JOHN NEWTON. [Editor.] A text-book of inorganic chemistry. Vol. II. The alkali-metals and their congeners. By ANDREW JAMIESON WALKER. London 1924. pp. xxvi + 380. ill. (*Reference.*) 20*s.* net.

—— —— Vol. VII. Part i. Oxygen. By JOHN NEWTON FRIEND and DOUGLAS FRANK TWISS. London 1924. pp. xxvi + 370. ill. (*Reference.*) 18*s.* net.

GRUBE, GEORG. Grundzüge der angewandten Elektrochemie. Vol. I. Dresden 1922. pp. xii + 268. ill. (*Recd.* 21/1/24.)

HOLMES, HARRY N. Bibliography of colloid chemistry. Preliminary edition. Washington 1923. pp. iii + 135. (*Reference.*) 7*s.* 6*d.* net.

KRAUSE, HUGO. Das Aluminium und seine Legierungen. 2nd edition. 2 vols. Wien 1923. pp. viii + 236, viii + 228. ill. (*Recd.* 21/1/24.)

KRÜGER, PAUL. Untersuchungsmethoden für die Textil-Industrie. Vol. I. Berlin 1923. pp. vi + 172. ill. (*Recd.* 25/1/24.)

LASSAR-COHN. Arbeitsmethoden für organisch-chemische Laboratorien. 5th edition. Spezieller Teil. Leipzig 1923. pp. xiv + 1144. (*Reference.*)

LIESEGANG, RAPHAEL ED. Kolloide in der Technik. Dresden 1923. pp. viii + 157. (*Recd.* 6/2/24.)

LYON, T. LYTTLETON, FIPPIN, ELMER O., and BUCKMAN, HARRY O. Soils, their properties and management. New York [1915, reprinted 1923]. pp. xxii + 764. ill. 18*s.* 6*d.* net. (*Recd.* 22/1/24.)

MERCK, [CARL] EMANUEL. Prüfung der chemischen Reagenzien auf Reinheit. 3rd edition. Darmstadt 1922. pp. iv + 378. (*Recd.* 25/1/24.)

MÜLLER, ERICH. Das Eisen und seine Verbindungen: eine Monographie auf physikalisch-chemischer Grundlage. Mit einem Abschnitt über "Die Legierungen des Eisens," von GEORG GRUBE. Dresden 1917. pp. viii + 558. ill. (*Recd.* 21/1/24.)

OSTWALD, WILHELM. Farbkunde. Leipzig 1923. pp. xvi + 314. ill. (*Recd.* 20/2/24.)

PREGL, FRITZ. Die quantitative organische Mikroanalyse. 2nd edition. Berlin 1923. pp. viii + 218. ill. (*Recd.* 8/2/24.)

SCHOENFLIES, ARTUR. Theorie der Kristallstruktur: ein Lehrbuch. Berlin 1923. pp. xii + 556. ill. (*Recd.* 25/1/24.)

SCHULTZ, GUSTAV. Farbstofftabellen. 6th edition. Vol. II. Edited by GUSTAV SCHULTZ and LUDWIG LEHMANN. Berlin 1923. pp. viii + 290. (*Reference.*)

SLOSSON, EDWIN EMERY. Creative chemistry: descriptive of recent achievements in the chemical industries. London 1921. pp. xvi + 312. ill. 7*s.* 6*d.* net. (*Recd.* 18/1/24.)

TRILLICH, HEINRICH. Das Deutsche Farbenbuch. Vol. I. München 1923. pp. vi + 136. ill. (*Recd.* 20/2/24.)

VALENTA, EDUARD. Photographische Chemie und Chemikalienkunde. 2nd edition. Part II. Organische Chemie. Halle (Saale) 1922. pp. xiv + [334]. (*Recd.* 21/1/24.)

VOGEL, J. H., [and others]. Das Acetylen: seine Eigenschaften, seine Herstellung und Verwendung. [Chem. Tech. in Einzeldarstellungen.] 2nd edition. Leipzig 1923. pp. xii + 424. ill. (*Recd.* 25/1/24.)

WALDEN, PAUL. Molekulargrössen von Elektrolyten in nichtwässerigen Losungsmitteln: zur Kenntnis der Polymerie, Assoziation und Autokomplexbildung von Salzen, Säuren und Basen. Dresden 1923. pp. xii + 350. (*Recd.* 20/2/24.)

WERNER, ALFRED. Neuere Anschauungen auf dem Gebiete der anorganischen Chemie. 5th edition. By PAUL PFEIFFER. Braunschweig 1923. pp. xiv + 444. (*Recd.* 20/2/24.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Department of Defence.* Munitions Supply Board. Technical reports 1921—1922. Melbourne 1922. pp. 34. ill.

—— —— The source and influence of impurities in 80 : 20 cupronickel. By CLEMENT BLAZEY. Melbourne 1922. pp. 56. ill.

BOHR, NIELS. On the application of the quantum theory to atomic structure. Part I. The fundamental postulates of the quantum theory. (Translated from the *Z. Physik*, 1923, **13**, by L. F. CURTISS.)

MARTIN, GEOFFREY, and COOPER, WALTER JOHNSON. The exothermic reaction of Portland cement clinker formation. (British Portland Cement Research Assoc. Pamphlet No. 3.) London 1923. pp. 63. ill.

MIHOLIĆ, STANKO S. Chemical analysis of the mineral water of Lipik. (A summary of the paper published in "*Rad*" 1923, **228**.)

MOIR, JAMES. Colour and chemical constitution. Part XVIII.

Colourless substances in H_2SO_4 (halochromy). (From the *Trans. Roy. Soc. S. Africa*, 1923, **11**.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation Board.* Special Report No. 16. Canned fruit. By WILLIAM GEORGE SAVAGE and RODERICK FRANCIS HUNWICKE. London 1923. pp. iv + 34.

—— —— *Fuel Research Board.* Technical Paper No. 8. The steaming of Wigan Arley coal in vertical gas retorts. London 1923. pp. iv + 18. ill.

—— —— Physical and chemical survey of the national coal resources, No. 2. Interim report on methods of analysis of coal. London 1923. pp. vi + 28. ill.

SIMONSEN, JOHN LIONEL. The constituents of some Indian essential oils. Parts XI and XII. (From the *Indian Forest Records*, 1923, **10**.)

SMITH, EDITH PHILIP. Comparative studies on respiration. XXII. The effect of lactic acid on the respiration of wheat. (From the *Amer. J. Bot.*, 1922, **9**.)

UNITED STATES. *Department of Agriculture.* Department Bulletin No. 1194. A chemical and structural study of mesquite, carob, and honey locust beans. By G. P. WALTON. Washington 1923. pp. 19. ill.

—— —— Department Bulletin No. 1203. Experimental production of straw gas. By HARRY E. ROETHE. Washington 1923. pp. 10. ill.

VOEGTLIN, CARL, DYER, HELEN A., and LEONARD, CLIFFORD SHATTUCK. The mechanism of the action of arsenic upon protoplasm. (From the *U.S. Public Health Reports* 1923, **38**.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

An Informal Dinner of the Chemical Society was held at the Hotel Cecil, Strand, on the 27th March, 1924, at 7 for 7.30 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair. Fellows and their guests were present to the number of 251.

The following toasts were honoured:

"The Loyal Toasts," by the PRESIDENT.

"The Chemical Society, coupled with the name of the President," by Mr. H. J. EVANS, B.Sc., A.I.C.

"The Retiring Secretary, Professor J. C. Philip, O.B.E., F.R.S.," by Professor G. T. MORGAN, O.B.E., F.R.S.

"The Longstaff Medallist for 1924, Professor F. G. Donnan, C.B.E., F.R.S.," by Professor E. C. C. BALY, C.B.E., F.R.S.

Miss Megan Foster sang during the evening, and other musical contributions were made by Mr. L. J. Burrage, Dr. E. C. Edgar, and Professor J. C. Philip.

Ordinary Scientific Meeting, Thursday, April 3rd, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
John Cooke Hewlett.....	Feb. 18th, 1892.	March 28th.
Edward Partington	Feb. 16th, 1911.	March 2nd.

It was announced

1. That Professor Irvine Masson had resigned from the position of Senior Secretary on the occasion of his leaving London, and that the Council had passed the following resolution:

> "In regretfully accepting the resignation of Dr. Irvine Masson from the office of Secretary, the Council desires to put on record its sense of the zeal and ability he has shown in the conduct of the Society's affairs. In connexion more especially with the publication side of the Society's activities

Dr. Masson's scientific capacity and literary sense have been of the utmost service, and the Council regrets the loss of such a capable and zealous colleague."

2. That Dr. T. Slater Price had been appointed as Senior Secretary until the next Annual General Meeting, in accordance with Bye-Law V.

3. That the resignation of Professor J. M. Thomson as Chairman of the Library Committee had been accepted and that the Council had passed the following resolution:

"The Council desires to place on record its great appreciation of the high services which have been rendered to the Society by Professor J. M. Thomson in his capacity of Chairman of the Library Committee. To his direction of the policy of the Committee is very largely due the value of the Library to chemists in this country, on whose behalf the Council now presents to Professor Thomson its most cordial thanks."

4. That Professor J. R. Partington had been appointed Chairman of the Library Committee.

5. That in view of the fact that the financial position of the Society is under consideration, the Treasurer is authorised by the Council not to accept Life Composition Fees at the present rate.

6. That the following Committees for 1924–1925 had been appointed by the Council:

Finance Committee.—J. L. Baker, A. Chaston Chapman, F. P. Dunn, C. A. Hill, G. T. Moody, R. H. Pickard, and the Officers.

House Committee.—J. L. Baker, Sir Herbert Jackson, Alexander Scott, J. M. Thomson, Sir William A. Tilden, E. W. Voelcker, and the Officers.

Library Committee.—P. P. Bedson, O. L. Brady, J. R. Partington (*Chairman*), Sir Thomas K. Rose, Sir John Russell, Sir William A. Tilden, the Librarian, and the Officers, together with the following representatives of contributing Societies: J. L. Baker, C. Dorée, J. C. Drummond, A. Harden, J. P. Longstaff, R. L. Mond, and G. Senter.

Publication Committee.—E. C. C. Baly, O. L. Brady, J. J. Fox, W. N. Haworth, I. M. Heilbron, J. W. McBain, H. McCombie, I. Masson, W. H. Mills, T. S. Moore, J. R. Partington, J. C. Philip, R. H. Pickard, F. L. Pyman, N. V. Sidgwick, and the Officers.

Research Fund Committee.—H. B. Baker, E. C. C. Baly, Sir James J. Dobbie, F. G. Donnan, W. H. Mills, R. H. Pickard, R. Robinson, N. V. Sidgwick, S. Smiles, Sir James Walker, and the Officers.

Miss E. G. Turner was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

Thomas Leslie Garner, B.Sc., Wymeswold, Loughborough.
Louis Ivan Allan Mitcheli, M.Sc., University College, Gower Street, W.C. 1.
Ahmad Zaki, B.Sc., Chemistry Department, The University, Liverpool.

The following papers were read :

"The tautomerism of dyads. Part II. Acetylene and its halogen derivatives." By EDITH H. INGOLD (USHERWOOD).

"The potassium salts of phenolphthalein." By H. BASSETT and D. J. T. BAGNALL.

"The hydrolysis of potassium ferricyanide and potassium cobalticyanide by sulphuric acid." By H. BASSETT and A. S. CORBET.

"A phase rule study of the cupro-, argento-, auro-, and thallocyanides of potassium." By H. BASSETT and A. S. CORBET.

THE FARADAY LECTURE.

The Faraday Lecture, entitled "Atomism in Modern Physics," will be delivered by Professor R. A. Millikan, at the Royal Institution, Albemarle Street, W. 1., on Thursday, June 12th, 1924, at 8.30 p.m., instead of June 26th as previously announced.

RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for Grants, to be made on forms which can be obtained from the Assistant Secretary, Chemical Society, Burlington House, W. 1., must be received on or before Monday, June 2nd, 1924.

All persons who received grants in June, 1923, or in June of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 2nd.

List of papers, or Abstracts thereof, received between March 21st, and April 3rd, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Investigations on the dependence of rotatory power on chemical constitution. Part XXI. Some compounds containing the secondary octyl radical linked to oxygen." By H. HUNTER.

"The correlation of additive reactions with tautomeric change. Part III. The cyano-imino-additive process." By E. H. INGOLD (USHERWOOD).

"Investigations on the supposed existence of copper-carbonyl." By E. MOND and C. HEBERLEIN.

"Dyes derived from phenanthraquinone. Part V. Phenanthraphenazinazines." By A. C. SIRCAR and P. C. DUTT.

"On the condensation of resorcinol and a few other aromatic hydroxy-compounds with some acids, esters, lactones, and lactams." By R. N. SEN and S. S. G. SIRCAR.

"An examination of the binary system sodium sulphite–water by extrapolation from the ternary system sulphite–sulphate–water." By A. C. D. RIVETT and N. B. LEWIS.

"Miscibility of anhydrous sulphite and sulphate of sodium." By N. B. LEWIS and A. C. D. RIVETT.

"Studies in the organic polysulphides. Part II. The action of anhydrous potassium pentasulphide on allyl iodide and on some aromatic halogen derivatives." By J. S. THOMAS and R. W. RIDING.

"Halogen-substituted aryl*iso*thiocyanates." By F. D. CHATTAWAY, R. K. HARDY, and H. G. WATTS.

"The hafnium content of zirconium ores. Part II." By G. HEVESY and V. T. JANTZEN.

"Quebrachamine." By E. FIELD.

"The orientating influence of the thiocyano-group in aromatic compounds." By F. CHALLENGER and A. D. COLLINS.

"The hafnium content of some historical zirconium preparations." By G. HEVESY and V. T. JANTZEN.

"Chemical affinity and the electronic structure of atoms." By B. H. WILSDON.

"The variation of the solubility of phosphates with hydrogen-ion concentration. Introduction and Part I. Phosphates of the alkaline-earth metals." By W. R. G. ATKINS.

"Catalytic racemisation of the diastereoisomeric *l*-menthylphenylbromoacetates." By A. MCKENZIE and I. A. SMITH.

"Physostigmine (eserine). Part II. The synthesis of physostigmol ethyl ether." By E. STEDMAN.

"Researches on residual affinity and co-ordination. Part XX. Chromic and cobaltic lakes of mordant azo-dyes." By G. T. MORGAN and J. D. M. SMITH.

"The electrometric titration of chromic acid using (*a*) the hydrogen electrode, and (*b*) the oxygen electrode." By H. T. S. BRITTON.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 1st, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
George Herbert Bailey	Dec. 16th, 1875.	April 18th, 1924.
William Love Biggart	June 19th, 1913.	March 15th, 1924.
Louis Charles Daniell	June 16th, 1887.	Dec. 15th, 1923.
John Frederick Davis	Dec. 17th, 1857.	Sept. 1923.
Alfred Lloyd	Feb. 19th, 1880.	April 10th, 1924.

Mr. H. J. S. King was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

Alexander Forbes, 564, Willoughby Road, Willoughby, Sydney, N.S.W.
Herbert John George, M.A., A.I.C., 22, St. John Street, Oxford.
Harold Higham, Broadmeadow House, Teignmouth.
James William Pardoe, Ivanhoe, Boundary Road, Wood Green, N. 22.
Madho Prasad, Professor, M.Sc., Meerut College, Meerut, U.P., India.
John Herbert Window Rumsey, Sunnybank, Knoll's Green, Knutsford.

Mrs. C. K. Ingold and Mr. J. D. Pratt were elected Scrutators, and a ballot for the election of Fellows was held, the following subsequently being declared elected as Fellows :

Allah Bakhsh, M.A., B.Sc.
Profulla Kumar Banerjee.
John Barnett, B.Sc., A.I.C.
Charles Montague Bere, B.Sc.
Wilson Birchenough, B.Sc.
Maurice John Burgess.
Frederick William Webb Butler.
Ernest George Churchill, M.Sc., A.I.C.
Alfred Cecil Cramp.
Aubrey Wilson Dye.
Wilfrid Henry Edwards.
Joseph John Etridge, B.Sc.
Frederick Kenneth Ewart, B.A.
Herbert Firth.
Percy Gillman, B.Sc.
Foad Mikhail Gindi, B.Sc.
George Hagues, B.Sc., A.I.C.
Thomas Henry Hamnett.
Hubert Teare Harry, B.Sc.
Francis William Hodges, B.Sc.
John Alexander Hogg.
Harold Vivian Horton, B.Sc., A.I.C.

John William Humpleby.
John Innes, B.Sc.
Dudley Jenkin.
Ram Chandra Khanna, B.Sc.
Louis Klein, B.Sc.
Stanislaw Kazimierz Kon, Ph.D.
Jessie Mary I. Landon, B.Sc.
James Pickett Laurie.
Douglas McKie, B.Sc.
Joseph Malsbury.
Godfrey Vincent John Maxted, B.A.
Edith Morrison, B.Sc.
Binay Chandra Mukerjee, M.Sc.
Ronald Charles Odams, B.A.
Pramatha Nath Paul, B.Sc.
Frank Bertram Phillips, B.Sc.
Eric George Kemp Pritchett.
Frederick Charles Randall, M.Sc., A.I.C.
Archibald Lewis Roberts.
Thomas Roberts.
Ralph John Seal, B.Sc., A.I.C.
Ian Charles Park Smith.
Bodh Raj Sobti, M.Sc.
Charles Mansfield Swain.
William John Watkins.
Joseph Hughes Williams, B.Sc.
Frank Beresford Windle.
Walter Ambrose Woodrow.
George Watson Young, B.Sc.

The following papers were read :

" The electrometric titration of chromic acid, using (*a*) the hydrogen electrode, and (*b*) the oxygen electrode." By H. T. S. Britton.

" Iminodihydro-1 : 2 : 3-triazole. Part II. Intra-annular migration of the dyad type and intra-nuclear tautomerism without migration." By H. W. Carnelley and P. K. Dutt.

" The formation of triphenylmethylphosphinic acid from triphenylmethoxyphosphorus dichloride." By D. R. Boyd and F. J. Smith.

" Investigations of the chromates of thorium and the rare earths. Part II. The chromates of lanthanum, praseodymium, neodymium, and samarium." By H. T. S. Britton.

Ordinary Scientific Meeting, Thursday, May 15th, 1924, at 8 p.m., Professor W. P. Wynne, D.Sc., F.R.S., President, in the Chair.

The President announced :

1. That the volume of " Chemical Reviews," recently issued by the American Chemical Society is offered to Fellows of the Chemical Society at the reduced price of $4.00, plus postage. This yearly volume will consist of about 500 pages, and will be published quarterly (in January, April, July, and October of each year). It will be devoted to articles of from about 20 to 50 pages embodying reviews or essays by specialists which might not consist essentially of results of their personal research.

Subscriptions should be sent to the Williams and Wilkins Co., Mount Royal and Guildford Avenues, Baltimore, Maryland.

2. That in view of the fact that the volume of the Annual Reports for 1923 (bound in cloth) was supplied without extra charge to Fellows who made application, the Council has decided

that the shillings received from Fellows for binding this volume shall be returned to those Fellows making application to the Assistant Secretary before the 31st October, 1924, and that the money in hand at that date shall be placed to the credit of the Publications Fund.

The following were formally admitted Fellows of the Chemical Society :—L. Klein and R. J. Seal.

Certificates were read for the first time in favour of :

Mark Gallagher, B.Sc., 2, Kingsgate Terrace, Hexham.
Mohammed A. Hamid, M.Sc., Baghhanpura, Lahore, India.
James Arthur Durham Hickson, B.Sc., 20, Ellerdale Road, Hampstead, N.W. 3.
Purushottam Dás Kapur, B.Sc., 2, Hayburn Crescent, Glasgow.
Percival Charles Leggeter, M.C., B.A., Glencot, Hatherley Road, Gloucester.
Gustaf Jim Östling, Ph.D., The University, Helsingfors, Finland.
Ralph Victor Webb, 15, Ridley Road, Harlesden, N.W. 10.
Rhys Williams, Dolfor, Wern Road, Skewen, Neath.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Ludvig Johannes Lindeman, Royal University of Agriculture, Aas, Norway.
Lee Irvin Smith, M.A., Ph.D., Campus Club, 112, Church Street S.E., Minneapolis, U.S.A.

The following papers were read :

"The bromo-derivatives of 1-methylglyoxaline and the constitution of 'chloroxalmethylin.'" By I. E. Balaban and F. L. Pyman.

"Synthesis of amygdalin." By R. Campbell and W. N. Haworth.

"Reactivity and radiation. The photochemical union of hydrogen and sulphur." By R. G. W. Norrish and E. K. Rideal.

FARADAY LECTURE.

The Faraday Lecture, entitled "Atomism in Modern Physics," will be delivered by Professor R. A. Millikan, on Thursday, June 12th, 1924, at 5.30 p.m. The Lecture will be given, by the kind permission of the Managers, in the theatre of the Royal Institution, Albemarle Street, W. 1.

Admission will be by ticket only. Each Fellow of the Society is entitled to two tickets, which may be obtained on application to the Assistant Secretary, The Chemical Society, Burlington House, W. 1.

LIST OF FELLOWS.

It has been decided, for reasons of economy, that the List of Fellows shall not be published this year.

List of papers, or Abstracts thereof, received between April 4th and May 15th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"A simple non-splash ring for use with Scheibler's desiccator." By S. C. BRADFORD.

"The adiabatic cooling of some organic substances in dependence of pressure." By N. A. PUSHIN and E. V. GREBENSHCHIKOV.

"The action of thionyl chloride on hydroxy-anthraquinones. Part I. Alizarin. The sulphurous ester of alizarin." By A. GREEN.

"Electrolytic formation of alloys and amalgams of manganese." By A. N. CAMPBELL.

"Reactions in the hydroaromatic series resulting in the formation of aromatic compounds. Part I. The action of chlorine on 5-chloro-1 : 1-dimethyl-Δ^4-*cyclo*hexen-3-one." By L. E. HINKEL.

"The solubility of sodium fluoride in aqueous solutions of hydrofluoric acid." By D. B. JEHU and L. J. HUDLESTON.

"Titanous salts as reducing agents." By E. KNECHT.

"Condensation of aryldiazonium salts and of alkyl nitrites with certain derivatives of cyanoacetic acid." By T. K. WALKER.

"The action of diazo-salts on methyl sulphonamide." By P. K. DUTT.

"The resolution of *trans-cyclo*butane-1 : 2-dicarboxylic acid." By L. J. GOLDSWORTHY.

"Derivatives of a new form of mannose." By J. C. IRVINE and W. BURT.

"Studies on the relation between optical activity and chemical constitution. Part V. Rotatory dispersions of *d*-camphorimide, *d*-camphorbenzylimide, benzyl-*d*-camphoramic acid and their derivatives." By B. K. SINGH and A. C. BISWAS.

"The composition and properties of clay." By A. F. JOSEPH and J. S. HANCOCK.

"The ternary alloy system aluminium–cadmium–zinc." By N. F. BUDGEN.

"A new method for the quantitative determination of tri- and poly-valent kations and their separation from the bivalent by means of mercury derivatives of ammonia." By B. ŠOLAJA.

"Studies in mutual solubility. Part III. The mutual solubility of glycerol and arylamines." By R. R. PARVATIKER and B. C. MCEWEN.

"Studies in mutual solubility. Part IV. The mutual solubility o glycerol and hydroxy- and amino-derivatives." By B. C. MCEWEN.

"The direct thionation of aniline." By H. H. HODGSON.

"A modified dichromate method for glycerine determination. The hydration of curd fibres of sodium palmitate." By H. B. BENNETT.

"Photosynthesis in tropical sunlight. Part I." By R. P. SANYAL and N. R. DHAR.

"The tautomerism of amidines. Part IV. The methylation of 4(or 5)-nitroglyoxaline and 4(or 5)-phenylglyoxaline." By C. E. HAZELDINE, F. L. PYMAN, and (the late) J. WINCHESTER.

"Adsorption and constitution. The organic acids in animal charcoal." By K. M. GRIFFIN, H. L. RICHARDSON, and P. W. ROBERTSON.

"Halogenation of *s*.-dipotassium tetranitroethane." By L. HUNTER.

"An intense lithium flame for polarimetric use." By H. HUNTER.

"Organic compounds of arsenic. Part I. Derivatives of *ortho*benzarsinic acid." By J. A. AESCHLIMANN and N. P. MCCLELAND.

"The yield of β-glucosane obtained from low-pressure distillation of cellulose." By H. J. P. VENN.

"The isomerism of the oximes. Part XIX. Substituted cinnamaldoximes." By O. L. BRADY and H. J. GRAYSON.

"Oxidation potentials of ferrous and ferric salts in concentrated hydrochloric acid and phosphoric acid." By S. R. CARTER and F. H. CLEWS.

"The polysulphides of the alkali metals. Part V. The monosulphide and disulphide of lithium." By J. S. THOMAS and J. H. JONES.

"Synthesis of γ-tetrahydroquinolone and a new synthesis of γ-methoxyquinoline." By G. R. CLEMO and W. H. PERKIN, jun.

"Studies in the configuration of αα′-dibromodibasic acids. Part II. Derivatives of adipic acid." By A. W. BERNTON, H. R. ING, and W. H. PERKIN, jun.

"1 : 2 : 3 : 4 : 5 : 6 : 7 : 8-Octahydrocarbazole and its derivatives." By W. H. PERKIN, jun., and S. G. P. PLANT.

"The chemistry of the glutaconic acids. Part XVI. Three-carbon tautomerism in the *cyclo*propane series. Part III. Spectrochemical evidence." By F. R. GOSS, C. K. INGOLD, and J. F. THORPE.

"The additive formation of four-membered rings. Part V. The formation of stable dimethylene-1 : 2-oxaimines from ethylenes and nitroso-compounds, with special reference to the direction of the addition." By C. K. INGOLD and S. D. WEAVER.

"Equilibrium in the systems cupric sulphate–potassium sulphate–water, and cupric sulphate–ammonium sulphate–water, at several temperatures." By R. M. CAVEN and T. C. MITCHELL.

"A criticism of the distillation method of measuring vapour pressures." By L. J. HUDLESTON.

"Electrometrical studies on azo- and hydrazo-compounds." By E. BILMANN and J. H. BLOM.

"On nitrophenols." By S. M. SANÉ and S. S. JOSHI.

"Derivatives of methylstannonic acid. Part II." By H. LAMBOURNE.

"Strychnine and brucine. Part II." By G. R. CLEMO, W. H. PERKIN, and R. ROBINSON.

"Vinyl-derivatives, especially of carbazole and tetrahydrocarbazole, and their behaviour with acids." By G. R. CLEMO and W. H. PERKIN.

"The product of oxidation of nickel carbonyl in toluene solution." By P. C. L. THORNE.

"The oxidation of sabinol with hydrogen peroxide." By A. ROBERTSON and G. G. HENDERSON.

"The reactions of thiophosgene. Part I. The reaction between aromatic primary amino-compounds." By G. M. DYSON and H. J. GEORGE.

"Studies in the analysis of coal. Part I. Estimation of nitrogen in coal by the Kjeldahl method." By G. I. FINCH, R. P. FRASER, and E. LEWKOWITSCH.

"Orthochlorodinitrotoluenes. Part V. 2-Chloro-3 : 6-dinitrotoluene." By G. T. MORGAN and T. GLOVER.

"'Bitumen' in meteorites." By P. E. SPIELMANN.

"On solid phases of invariable composition." By T. W. J. TAYLOR.

"The ignition of gases. Part III. Ignition by the impulsive electrical discharge. Mixtures of the paraffins with air." By R. V. WHEELER.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 19TH, 1924.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

FORBES, ALEXANDER, 564, Willoughby Road, Willoughby, Sydney, N.S.W., Australia. British. Pharmaceutical Chemist. Pharmaceutical Chemist of Queensland and New South Wales. Qualified Chemist of Great Britain and Member of the Pharmaceutical Society of Great Britain. Student of the late Dr. John Muter, F.R.S.Ed., and Johnston & Sons, 23, Cross Street, Finsbury, London. Examiner in Organic and Inorganic Chemistry to the Pharmacy Board of Queensland. Teaching and assaying. Monthly contributions to the Australasian Journal of Pharmacy on Inorganic and Organic Chemistry. I am desirous of becoming a Member in order to get up to date

literature on the above subjects. (*Signed by*) R. C. Cowley, Arthur B . Chater, J. B. Henderson.

GALLAGHER, MARK, 2, Kingsgate Terrace, Hexham-on-Tyne. Student reading for the Degree of M.Sc. Two years in laboratory of the late T. E. Riddle, Public Analyst, Hexham. B.Sc. (*Signed by*) W. N. Haworth, G. C. Leitch, W. R. Anderson.

GARNER, THOMAS LESLIE, Wymeswold, Loughboro. English. Research Student. Gained 3rd Class Honours at 1923 London B.Sc. examination and also the Diploma of Loughboro College in 1923. Now engaged at Loughboro College in research work. (*Signed by*) Arthur Bramley, Alfred Thomas Eggington, Geo. Lawton.

GEORGE, HERBERT JOHN, 22, St. John St., Oxford. British. Fellow and Assistant Tutor, Jesus College, Oxford. M.A. (Oxon), 1st Class Honours Chemistry, School of Nat. Science, Oxford, 1914. A.I.C. (*Signed by*) D. L. Chapman, F. D. Chattaway, B. Lambert.

HAMID, MOHAMMED ABDUL, Baghhanpura, Lahore, Punjab, India. Indian. Research Student, University College, London. B.Sc. with Physics and Honours in Chemistry of the Punjab University. M.Sc. in Chemistry of the Punjab University. Student Demonstrator at the Govt. College, Lahore, for one year. Worked at the Technological Institute, Cawnpore, for one year. Working at present for a London Ph.D. in Physical Chemistry under Professor F. G. Donnan, C.B.E., M.A., Ph.D., F.I.C., F.R.S. (*Signed by*) Allan E. Mitchell, F. G. Donnan, W. E. Garner.

HICKSON, JAMES ARTHUR DURHAM, 20, Ellerdale Road, Hampstead, N.W. 3. British. Research Work. 4 Years student at University College, London. B.Sc. London. Post-graduate research work under Dr. Brady. Research work with C. F. Cross (Cross & Bevan), Jan.–May, 1924. (*Signed by*) C. F. Cross, E. R. Chrystall, O. L. Brady, Bernard Dyer.

HIGHAM, HAROLD, Broadmeadow House, Teignmouth. British. Gas Engineer and Manager. Studied Gas Manufacture and Allied Chemistry at the Manchester School of Technology (now Manchester University) under Mr. F. S. Sinnatt (now Assistant Director of Fuel Research). Obtained 2nd position in England in the City and Guilds of London Institutes Examinations. Lecturer in Gas Engineering and Gas Supply at the Bradford (Yorks) Technical College. Whitworth Scholar and member of the Whitworth Society. For 12 years on the staff of the City of Bradford Gas Department, then Engineer and Manager of the Shipley Gasworks, and for the last 5½ years Gas Engineer Manager at Teignmouth. I desire to keep in touch with current chemical literature, particularly relating to the gas industry. (*Signed by*) G. W. Slatter, Ernest Quant, C. D. Birks, C. A. Pelley.

KAPUR, PURUSHOTTAM DÁS, Agra, U.P., India, but since 1919 at 2, Hayburn Crescent, Glasgow, W. 1. Indian (British subject by birth). Chemist and Sugar Technologist. Degree of B.Sc. in Applied Chemistry (Glasgow Univ.) and Diploma of the Royal Technical College, Glasgow, in Sugar Manufacture with 1st place in order of merit and 98% marks at the final diploma exam. in the principal subject and 1st Class in Bacteriology. Period devoted to the study of Theoretical and Practical Chem. and Industrial Chem., 7½ years, and 1 year's experience in sugar industry. (*Signed by*) G. G. Henderson, Thomas Gray, F. J. Wilson.

LEGGETTER, PERCIVAL CHARLES, Glencot, Hatherley Road, Gloucester. British. Science Master at Beaumont College. M.C., B.A. (Oxon.). Shortened Honours Course in Faculty of Natural Science (Chemistry). (*Signed by*) M. P. Applebey, E. G. J. Hartley, F. D. Chattaway.

MICHELI, LOUIS IVAN ALLAN, Brisbane, Australia. British. Student. M.Sc., University of Queensland, Australia, and at present engaged in research at University College, London. (*Signed by*) F. G. Donnan, Irvine Masson, Allan E. Mitchell.

ÖSTLING, GUSTAF JIM, Helsingfors, Finland. Docent at University of Helsingfors. Doctor of Philosophy at Helsingfors University, 1911. Has been studying chemistry in England in 1911 and 1912, engaged in chemical research and wishes to be in touch with research going on in England. (*Signed by*) Robert Robinson, Arthur Lapworth, W. H. Perkin, E. Hope.

PARDOE, JAMES WILLIAM, A.K.C., "Ivanhoe," Boundary Road, Wood Green, N.22. English. Head Master. 1st Class Certificates (South Kensington) in Advanced Theoretical Chemistry, Advanced Practical Chemistry. Teacher of Chemistry to upper forms for 10 years. My scheme of science includes Chemistry and I am anxious to keep abreast of current developments. I hold also advanced cert. in Physiography, Geology, Physiology, etc. (*Signed by*) Joseph S. Bridges, T. R. Lewis, W. T. Davies.

PRASAD, MADHO, Meerut College, Meerut, U.P., India. Indian. Professor, Meerut College, Meerut. (1) Master of Science in Chemistry (M.Sc.), Allahahad University, India. (2) Author of "Organic Chemistry for Intermediate Classes." (3) Professor of Chemistry for the last 8 years, teaching chemistry to Degree classes affiliated to the Allahabad University. (*Signed by*) S. S. Deshapande, N. R. Dhar, K. P. Chatterjee.

RUMSEY, JOHN HERBERT WINDOW, "Sunnybank," Knolls Green, Knutsford. British. Works chemist. Works chemist for the last 20 years at Messrs. Halden & Co., Ltd., Reddish, nr. Stockport; conducted all their research work and improvements during that period. Was one of the earliest if not the first to introduce into this country the manufacture by machinery of ferro prussiate, ferro gallic and sepia papers, for plan copying by photography. Also introduced to our firm the improved "Arc Process," direct copying by photography on zinc plates, also mass copying, styled "True to Scale" process, and other improvements in works and solutions for coating above processes, were worked out by me. (*Signed by*) Jas. R. Walmsley, G. G. Hammond, C. F. S. Rothwell.

WEBB, RALPH VICTOR, 15, Ridley Rd., Harlesden, N.W. 10. British. Lecture Assistant, University College, London. I wish to keep in touch with the progress of Chemical Research, by means of meetings, Journals and use of Library. (*Signed by*) Irvine Masson, W. E. Garner, F. G. Donnan.

WILLIAMS, RHYS, Dolfor, Wern Road, Skewen, Glam. British. Senior Chemistry Master at Dunheved College, Launceston, Cornwall. Student at University College, Cardiff, from January 1919 to June 1920, taking and completing courses of chemistry for the B.Sc. Degree in the University of Wales. Senior Science (Chem.) Master at Dunheved College since Sept. 1921. (*Signed by*) Claude M. Thompson, E. P. Perman, B. Perrott.

ZAKI, AHMAD, School of Chemistry, Liverpool University. Egyptian. Research Chemist. B.Sc. (Hon.) in chemistry from Liverpool University. (*Signed by*) E. C. C. Baly, I. M. Heilbron, William Doran, Harold Rogerson, Stanley J. C. Snedker.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

LINDEMAN, LUDVIG JOHANNES (JOLES LINDEMAN). Royal University of Agriculture, Aas, Norway. Norwegian. "Docent," adjointed professor. 1921 Candidatus realium (between M.A. and D.S.). 5 Years assistant in

chemistry at the Chemical Laboratory at the University of Christiania (Norway). Since 1922 adjointed professor (Colloid Chemistry) at the University of Christiania, and since the same year adjointed professor (ordinary and agriculture chemistry) at the Royal University of Agriculture, Aas. Publications in *Kolloid Zeitschrift*. (*Signed by*) S. P. L. Sórensen, The Svedberg, Sven Odén, E. J. Russell.

Smith, Lee Irvin, Campus Club, 112, Church St., S.E., Minneapolis, Minn., United States. Assistant Professor of Organic Chemistry, School of Chemistry, University of Minnesota, Minneapolis, Minnesota. B.A., Ohio State University, 1913. M.A., *ibid.*, 1915. M.A., Harvard University, 1917. Ph.D., Harvard University, 1920. Instruction in Chemistry, Harvard Univ., 1919–20. Instructor in Chemistry, Univ. Minnesota, 1920–21. Asst. Professor of Chemistry, Univ. Minnesota, 1921 to date. Papers: "The Reaction between Alkalis and certain Nitro*cyclo*propane Derivatives," *J.A.C.S.*, **44**, 624 (1922) (with E. P. Kohler); "The Action of Halogens on Aceto-acetic Ester," *J.A.C.S.*, **44**, 216 (1922). (*Signed by*) T. W. Richards.

ADDITIONS TO THE LIBRARY.

I. *Presented by the Society of Chemical Industry.*

Fischer, Martin Henry, with the collaboration of George D. McLaughlin and Marian O. Hooker. Soaps and proteins: their colloid chemistry in theory and practice. New York 1921. pp. x + 272. ill. 24*s*. net.

Fry, Harry Shipley. The electronic conception of valence and the constitution of benzene. London 1921. pp. xviii + 300. ill. 16*s*. net.

Harvey, Arthur. Tanning materials: with notes on tanning extract manufacture. London 1921. pp. viii + 182. ill. 15*s*. net.

Jörgensen, Ingvar, and Stiles, Walter. Carbon assimilation: a review of recent work on the pigments of the green leaf and the processes connected with them. (New Phytologist reprint No. 10.) London 1917. pp. viii + 180. ill. 4*s*. net.

Oliver, Thomas. [Editor.] Dangerous trades: the historical, social, and legal aspects of industrial occupations as affecting health, by a number of experts. London 1902. pp. xxiv + 892. ill. 25*s*. net.

Parry, Ernest John, and Coste, John Henry. The chemistry of pigments. London 1902. pp. viii + 280. ill. 12*s*. 6*d*. net.

Sabin, Alvah Horton. Red-lead and how to use it in paint. 3rd edition. New York 1920. pp. xii + 140. ill. 11*s*. 6*d*. net.

II. *Miscellaneous Donations.*

Armstrong, Edward Frankland. [Editor.] Chemistry in the twentieth century: an account of the achievement and the

present state of knowledge in chemical science. Prepared under the guidance of a committee representing the scientific societies. London 1924. pp. 282. ill. 15*s*. net. (*Recd.* 7/5/24.)

From the Publishers: Messrs. Ernest Benn.

BRENCHLEY, WINIFRED ELSIE. Manuring of grass land for hay. London 1924. pp. viii + 146. ill. 12*s*. 6*d*. net. (*Recd.* 15/5/24.)

From the Lawes Agricultural Trust.

HILDEBRAND, JOEL HENRY. Solubility. New York 1924. pp. 206. ill. $3 net. (*Recd.* 31/3/24.)

From the Publishers: The Chemical Catalog Company, Inc.

IMPERIAL MINERAL RESOURCES BUREAU. The Mineral Industry of the British Empire and Foreign Countries. War Period. Petroleum and allied products. (1913–1919.) London 1924. pp. 296.

From the Director.

INDIAN INSTITUTE OF SCIENCE. Some studies in biochemistry. By some students of Dr. Gilbert John Fowler. Bangalore 1924. pp. iv + 198. ill. (*Recd.* 30/4/24.)

From the Publication Committee.

KINGZETT, CHARLES THOMAS. Chemical encyclopædia: a digest of chemistry and chemical industry. 3rd edition. London 1924. pp. x + 606. (*Reference.*) 30*s*. net.

From the Publishers: Messrs. Baillière, Tindall & Cox.

KITTO, BENEDICT TREMBATH. Tested methods of mineral analysis. London 1924. pp. 128. ill. 7*s*. 6*d*. net. (*Recd.* 18/3/24.) From the Publishers: Messrs. H. F. & G. Witherby.

LUNGE, GEORGE. The manufacture of acids and alkalis. Completely revised and rewritten under the editorship of ALEXANDER CHARLES CUMMING. Vol. II. The manufacture of sulphuric acid. (Chamber-process.) By WILFRED WYLD. London 1924. pp. xii + 424. ill. (*Reference.*) 31*s*. 6*d*. net.

—— —— Vol. III. The concentration of sulphuric acid. By JOHN WILFRID PARKES. London 1924. pp. xii + 394. ill. (*Reference.*) 31*s*. 6*d*. net. From the Publishers: Messrs. Gurney & Jackson.

MARTINET, JOSEPH. Couleur et constitution chimique. Rédigé avec la collaboration de PAULINE ALEXANDRE. Paris 1924. pp. 328. 25*fr*. net. (*Recd.* 21/3/24.)

From the Publisher: M. Gaston Doin.

MATHESIUS, WALTHER. Die physikalischen und chemischen Grundlagen des Eisenhüttenwesens. (Chem. Tech. in Einzeldarstellungen.) 2nd edition. Leipzig 1924. pp. xviii + 483. ill. (*Recd.* 25/3/24.) From the Publisher: Herr Otto Spamer.

MENSCHUTKIN, BORIS N. Carbohydrates: (the chemical compounds around us). Leningrad 1924. pp. 76. [In Russian.] (*Recd.* 5/5/24.)

From the Author.

MENSCHUTKIN, BORIS N. Course of general (inorganic) chemistry. Moscow 1924. pp. 376. ill. [In Russian.] (*Recd.* 29/4/24.)
From the Author.

POLSKIEGO TOWARZYSTWA CHEMICZNEGO. Roczniki Chemji. Vol. II, etc., Warszawa 1922 +. (*For circulation.*)
From the Faraday Society.

RASCHIG, FRITZ. Schwefel- und Stickstoffstudien. Leipzig 1924. pp. viii + 310. ill. (*Recd.* 2/5/24.) From the Author.

RUSSELL, SIR EDWARD JOHN. Farm soil and its improvement. London 1923. pp. 126. ill. 7*s.* 6*d.* net. (*Recd.* 15/5/24.)
From the Author.

RUSSELL, SIR EDWARD JOHN, and members of the biological staff of the Rothamsted Experimental Station. The micro-organisms of the soil. London 1923. pp. viii + 188. ill. 7*s.* 6*d.* net. (*Recd.* 15/5/24.) From Sir John Russell.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Fuel Research Board.* Special Report No. 1. Pulverised coal systems in America. By LEONARD CHARLES HARVEY. 3rd edition. London [1924]. pp. 132. ill. (*Reference.*)
From the Department.

SOCIÉTÉ CHIMIQUE DE BELGIQUE. Bulletin. Vol. 32, etc. Gand 1923 +. (*For circulation.*) From the Faraday Society.

SVEDBERG, THEODOR. Colloid chemistry: Wisconsin lectures. New York 1924. pp. 266. ill. $3 net. (*Recd.* 22/3/24.)
From the Publishers: The Chemical Catalog Company, Inc.

UNION INTERNATIONALE DE LA CHIMIE PURE ET APPLIQUÉE. Comptes rendus de la quatrième conférence internationale de la chimie, Cambridge: 17 Juin—20 Juin 1923. Paris [1923]. pp. 204 + 40. (Three copies.) From Dr. S. Miall.

UNIVERSITY OF DURHAM PHILOSOPHICAL SOCIETY. Proceedings. Two volumes and four parts needed to complete the series.
From the Society.

III. *By Purchase.*

AINSWORTH-DAVIS, JAMES RICHARD. Crops and fruits. Resources of the Empire Series. Vol. I, part i. London 1924. pp. 144. 21*s.* net. (*Recd.* 30/4/24.)

—— Meat, fish, and dairy produce. Resources of the Empire Series. Vol. I, part ii. London 1924. pp. 104. 21*s.* net. (*Recd.* 30/4/24.)

AITKEN, JOHN. Collected scientific papers. Edited for the Royal Society of Edinburgh (with introductory memoir), by CARGILL GILSTON KNOTT. Cambridge 1923. pp. xxii + 592. ill. 30*s.* net. (*Recd.* 18/3/24.)

ANDREW, GEORGE WILLIAM. [Editor.] Fuel. Resources of the Empire Series. Vol. IV. London 1924. pp. 208. 21*s.* net. (*Recd.* 30/4/24.)

ASHE, A. W., and BOORMAN, HARRY GEORGE TRENCH. Chemicals. Resources of the Empire Series. Vol. VII. London 1924. pp. 208. 21*s.* net. (*Recd.* 30/4/24.)

BENECKE, WILHELM, and JOST, LUDWIG. Pflanzenphysiologie. 4th edition of Jost's "Vorlesungen über Pflanzenphysiologie." 2 vols. Jena 1924. pp. viii + 441, viii + 478. ill. (*Recd.* 1/5/24.)

BIRKETT, MATTHEW S. Ferrous metals. Resources of the Empire Series. Vol. VIII, part i. London 1924. pp. 166. 21*s.* net. (*Recd.* 30/4/24.)

BOISBAUDRAN, PAUL ÉMILE (DIT FRANÇOIS) LECOQ DE, and GRAMONT, (COMTE) ARNAUD DE. Analyse spectrale appliquée aux recherches de chimie minérale. 2 vols. Paris 1923. pp. liv + 342, iv + xix plates. (*Recd.* 5/4/24.)

BOLTON, EDWARD RICHARDS, and PELLY, RUSSELL GEORGE. Oils, fats, waxes, and resins. Resources of the Empire Series. Vol. IX. London 1924. pp. 276. 21*s.* net. (*Recd.* 30/4/24.)

BRAGG, SIR WILLIAM HENRY, and BRAGG, WILLIAM LAWRENCE. *X*-Rays and crystal structure. 4th edition. London 1924. pp. xii + 322. ill. 21*s.* net. (*Recd.* 18/3/24.)

CUSHNY, ARTHUR ROBERTSON. A text-book of pharmacology and therapeutics: or the action of drugs in health and disease. 8th edition. London 1924. pp. x, 17—708. ill. 24*s.* net. (*Recd.* 13/5/24.)

DULY, S. J. Timber and timber products, including paper-making materials. Resources of the Empire Series. Vol. II. London 1924. pp. 228. 21*s.* net. (*Recd.* 30/4/24.)

FREUNDLICH, ERWIN. The theory of relativity: three lectures for chemists. Translated by HENRY L. BROSE. London 1924. pp. xii + 98. ill. 5*s.* net. (*Recd.* 25/3/24.)

HARVEY, LEONARD CHARLES. Pulverised fuel, colloidal fuel, fuel economy, and smokeless combustion. London 1924. pp. xxvi + 466. ill. 42*s.* net. (*Recd.* 13/5/24.)

KAYSER, HEINRICH [GUSTAV JOHANNES], and KONEN, HEINRICH [MATHIAS]. Handbuch der Spektroskopie. Vol. VII. Part i. Leipzig 1924. pp. 498 + x. (*Reference.*)

KNECHT, EDMUND, and FOTHERGILL, JAMES BEST. The principles and practice of textile printing. 2nd edition. London 1924. pp. xx + 732. ill. 63*s.* net. (*Recd.* 13/5/24.)

MACLAREN, W. A. Rubber, tea, and cacao: with special sections on coffee, spices, and tobacco. Resources of the Empire Series. Vol. V. London 1924. pp. 334. 21*s.* net. (*Recd.* 30/4/24.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 5th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of :

	Elected.	Died.
Charles Thomas Blanshard	June 3rd, 1875.	May 8th, 1924.
Lewis Ough	May 7th, 1891.	April 17th, 1924.
Edgar Richards	Jan. 17th, 1889.	Jan. 21st, 1924.

The following were formally admitted Fellows of the Chemical Society : F. B. Phillips, H. Burgess.

Certificates were read for the first time in favour of :

Thomas Charles Battersby, 14*a*, Prospect Road, St. Albans.
Frank Walter Britton, 30, Frederick Road, Wylde Green, Birmingham.
Ronald George Juta Fraser, B.Sc., 65, Beaconsfield Place, Aberdeen.
Kenneth Massy Griffin, M.Sc., Government Analyst, Auckland, New Zealand.
Ian Hepburn, B.A., Polwartha, Rock, Wadebridge, Cornwall.
George Edward Draper Hunt, B.Sc., Bank Cottage, Lower Bradley Street, Wotton-under-Edge, Glos.
Ivor Evans Kear, B.Sc., Ingledene, Cinderford, Glos.
Henry Phillips, Ph.D., A.I.C., 80, Brook Street, Kennington Road, S.E. 11.
Thomas Rose, 27, Morley Carr, Lowmoor, Bradford.
Mulk Raj Saini, M.Sc., Hall Bazar, Amritsar, Punjab, India.
John Owen Thomas, Compton House, Ton Pentre, Rhondda, Glam.
John Pater Turner, M.A., South End Lodge, Newbury.

The following papers were read :

"Studies of dynamic isomerism. Part XVI. Mutarotation of beryllium benzoylcamphor. Formation of an additive compound with chloroform. The optical activity of beryllium." By H. BURGESS and T. M. LOWRY.

"Studies of valency. Part IV. The absorption spectra of camphor, benzylidene-camphor, and camphorquinone." By T. M. LOWRY and H. S. FRENCH.

"The resolution of α-terpineol." By A. T. FULLER and J. KENYON.

Extra Meeting held in the theatre of the Royal Institution (by kind permission of the Managers) on Thursday, June 12th, 1924, at 5.30 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the chair.

In opening the proceedings, the President said: The Faraday Lectureship was founded in 1868 to commemorate the name of Michael Faraday, who was a Fellow of the Chemical Society almost from its foundation in 1841 to the year of his death in 1867. By the kindness of the Managers of the Royal Institution—and most appropriately in view of Faraday's long association with the Institution itself—all the lectures have been given in this theatre. This afternoon, after a long silence extending over 10 years—the last Faraday Lecture being that given in 1914 by Arrhenius—we meet for the delivery of the 12th lecture of the series. It is a happy chance that the first Faraday lecturer after the War should be a citizen of that great nation across the Atlantic which speaks our language and shares our ideals. Professor Millikan's renown as a physicist is too well known for words of introduction to be necessary; his work on the electron which represents the highest achievement in determining its weight and measuring its charge, and all those investigations of his which bring out the atomic nature of electricity are appreciated as highly in this country as in his own. Without further delay, therefore, I will ask him to be good enough to deliver the Faraday Lecture on "Atomism in Modern Physics."

At the conclusion of the lecture, the PRESIDENT, in presenting the Faraday Medal, said:

Professor Millikan—in the name of the Chemical Society it is now my pleasant duty to invite your acceptance of this medal which bears the effigy of Faraday and has been expressly struck to commemorate the present occasion. It is the highest honour which this Society, the oldest Chemical Society in the world, has to confer and in making the presentation I do assure you of the great value and importance we attach to your scientific work.

Professor DONNAN in moving the vote of thanks said:

I hope Professor Millikan will realise from the heartiness of the applause and therefore the warmth of our welcome and appreciation, that there is no relation between English heads and hearts and the coolness and humidity of English weather.

Amongst the great things that the Fellows of the Chemical Society have done, perhaps the greatest was the founding of this Memorial Lecture in honour of the immortal Faraday. The greatest men from all parts of the world had come here to pay their homage to the memory of Faraday; such men as Dumas,

Cannizzaro, Helmholtz, Richards, and Rayleigh. In the roll of honour constituted by the Faraday Lecturers, the name of Professor Millikan would always occupy a justly honoured and distinguished place. He is recognised as one of the greatest of living Physicists, whose scientific work has contributed greatly to the advance of modern electronic and atomic Physics.

My own experience is that among the great things for which the United States of America are justly renowned, the greatest is their science; there have always been great American scientists, but the last seven years are specially marked by their "red-hot" enthusiasm.

In moving a very hearty vote of thanks to Professor Millikan for his brilliant lecture, I feel I am expressing not only the feelings of myself, but also of all who are present.

Sir OLIVER LODGE, who seconded the vote of thanks, said:

I congratulate the Chemical Society on being able to hand over a Faraday Medal in Faraday's own theatre to a worthy disciple of Faraday.

I had not realised that atomism in Electricity could be traced back, in any sense, to Franklin. But as regards Clerk Maxwell, though his theory was a continuous one, he was certainly impressed with the atomic character of electrolytic evidence, and I was much struck with a sentence in which he said that he expected many discoveries in the future from detailed investigation into the passage of electricity through rarefied gases,* an intimation since abundantly confirmed, though 1873 was before the active days of Sir J. J. Thomson.

Professor Millikan's lecture has been a pæan of victory over the conquest of the electron and the atom. His method of oiling the electron so as to see what it is doing, his accurate measurement of the unit charge by this means, and his vivid demonstration of discontinuity, he has only here touched on lightly; but they are a brilliant and well-known piece of work, and are now, I presume, getting into the text-books.

I saw Professor Millikan at work in Chicago before he went to Pasadena, and that great man Professor Michelson also. Like everybody else I was struck with the superabundant energy and enthusiasm with which the sciences of Physics and Astronomy are

* Speaking of the Gassiot strictions in vacuum tubes, Maxwell says: "These, and many other phenomena of electrical discharge, are exceedingly important, and when they are better understood they will probably throw great light on the nature of Electricity as well as on the nature of gases and of the medium pervading space. At present, however, they must be considered as outside the domain of the mathematical theory of Electricity."

being worked at and blended on the other side of the Atlantic, in so many of the Universities, and with such splendid experimental resources, more lavish than anything provided in this country. It is a mixed joy to see the centre of gravity of scientific research moving west, but we can comfort ourselves with the thought that the foundations were laid on this side.

The results he mentioned at the end were more difficult to follow because they are so new, they are still incubating; but his reconciliation of Compton and Duane is of great interest. And he seems at the back of his mind to have some idea of reconciling Bohr with Langmuir and Lewis, which is difficult. The kinetic atom is, I believe, true, but it is difficult to build into molecules: I am not surprised that chemists at present prefer the static atom. But evidently Professor Millikan has more to say on localised valency in due time.

So long as he is on electrons and atoms all goes triumphantly, but when he comes to the ether there is a fog. In radiation at present everything is not clear. There are more worlds to conquer there. We do not rightly understand the quantum yet. When we do, the present Keplerian age will give place to the Newtonian age which is to follow.

The vote of thanks was carried with acclamation, and in making brief acknowledgment PROFESSOR MILLIKAN said:

I have been very deeply touched by the remarks of the speakers, by the kindly appreciation of the audience, and by the unexpected presentation of the Faraday medal; for I have only at this moment become conscious of the fact that the Faraday Medal goes with the Faraday lectureship.

No memento could possibly be more dear to me than one which associates me in any way, however remote, with that universally beloved and admired man whose work was the starting point of the most important developments, scientific and industrial alike, of the past hundred years.

I have always looked upon the spot where Faraday lived and worked as the physicists' holy ground. To be in that spot itself, and to be given there a place in the limited succession of Faraday medallists I deem as high an honour as any scientist can aspire to.

But such an association with Faraday is but one of the causes of my present emotion. I myself am sprung wholly from British stock and, like most thoughtful Americans, I am an ardent believer in those ideals of civilisation which have had their chief development in this island and still find in many ways their finest expression here. I am therefore deeply touched by the kindly feelings

for America, and the kindly appreciation of American scientific effort which I find about me and which the speakers themselves have voiced.

If I may presume to speak for America I would say that whatever contrary impression you may receive from occasional utterances in certain highly discreditable portions of our press, the most representative feeling in America toward Great Britain is still, and I think is likely to remain, that of the child toward its parent. Our two countries represent but slightly different ideals, and are exerting much the same sort of influences upon the progress of civilisation. Where the centre of gravity of those influences shall be in the future is not yet determined, nor is it after all of great importance. The influences themselves unquestionably had their origins primarily in England, and England will have played the greatest rôle which it is given to a nation or to an individual to play when her ideals shall have spread throughout a world which sorely needs them.

In concluding the meeting, the PRESIDENT said :

Only one more thing remains to be done, and that is to give expression to the gratitude we all feel towards the Members and Managers of the Royal Institution for placing this historic theatre at our service for the purpose of this lecture. Everyone here must recognise that for us—chemists and physicists alike—this spot is hallowed ground—a fact which enhances our appreciation of the Institution's act of kindness so often renewed.

The vote of thanks was then moved from the Chair and passed with acclamation.

Extraordinary General Meeting, June 19th, 1924, at 7.45 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, occupied the Chair, and there were present 64 Fellows.

The notice convening the meeting was read and the President briefly indicated the reasons that had led the Council to put forward the proposed changes in the Bye-Laws.

On the motion of Professor C. K. Ingold, seconded by Professor D. R. Boyd, the following alterations were carried *nem. con.* :

1. That in Bye-Law I, paragraph 6 (p. 4) the following be deleted :

> " The person thus elected shall within three months of his election, or such further time as may be allowed by the Council, pay an admission fee and also his first annual subscription or

a life composition fee, otherwise his election shall be void. He shall also sign "

and that the following be substituted therefor :

" The amount of the admission fee, if any, payable on election to Fellowship, and the amount of the annual subscription and of the life composition fee shall be determined by the Council from time to time subject to confirmation by an Extraordinary General Meeting of the Society : Provided that the Council shall have power without such confirmation either wholly to remit or to reduce the admission fee, or to permit its payment by instalments extending over a term of years or otherwise, whenever it may consider it desirable to do so. The application of a candidate for election shall be accompanied by a deposit covering the admission fee, if any, or such part thereof as may be required by the Council, and the first annual subscription, which deposit shall be returned to the candidate in the event of non-election. The person thus elected shall sign "

The following alterations were proposed from the Chair and were also carried *nem. con.* :

2. That in Bye-Law I, paragraph 8 (pp. 4 and 5) the following be deleted :

" The amount of the admission fee, the annual subscription and the life composition fee shall be determined by the Council, subject to confirmation by an Extraordinary General Meeting of the Society."

3. That letter No. 2 in the Appendix referred to in Bye-Law X (p. 11), notifying the Election of a Fellow, be altered to read as follows :

" Dear

" I have the honour to inform you that on the day of you were elected a Fellow of the Chemical Society.

" I herewith transmit you a copy of the Bye-Laws, etc., according to which you are required to return the accompanying Obligation Form, duly signed, to the Secretaries.

" I am,

" Yours faithfully,

" *Secretary.*"

Dr. R. H. Pickard proposed the following alteration :

4. That in Bye-Law XVI, the last paragraph

" Each author of a paper published by the Society shall be entitled to ten copies of such paper free of expense."

be deleted.

This was seconded by Dr. N. V. Sidgwick and after discussion was declared carried by a majority of 39 to 7.

Ordinary Scientific Meeting, Thursday, June 19th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of :

	Elected.	Died.
Robert Mullineux Walmsley	March 1st, 1883.	June 15th.

The PRESIDENT announced :

1. That it has been decided that for reasons of economy the List of Fellows shall not be published this year.

2. That, in future, a charge will be made to Fellows for the Annual Reports, and that each Fellow will have the privilege of purchasing one copy of each volume of the Annual Reports for 1924 onwards, at 5*s*. 6*d*. post free. Further copies will be charged at the rate of 8*s*. 6*d*. post free, the price to the public being 10*s*. 6*d*., postage extra.

3. That Volume V of the Collective Index (which has been sold at a reduced price since January, 1923) will now be charged at the original price, *i.e.* £2 to Fellows, and £2 10*s*. to the Public.

The following were formally admitted Fellows of the Chemical Society : Walter A. Woodrow, E. Pritchett, F. Beresford Windle, and Francis W. Hodges.

Certificates were read for the first time in favour of :

Mostafa Badia, 6, First Avenue, Selly Park, Birmingham.
Len Riley Roberts, O.B.E., National Oil Refineries, Ltd., Skewen, Neath.
Oswald Counsell Stephens, M.Sc., Temuka, Timaru, New Zealand.
Ernest William Wignall, 9, Tredegar Terrace, Bow, E. 3.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

Harold William Beardall, P.O. Box 34, Newcastle, Natal, S. Africa.
William George Gill, c/o Messrs. A. H. Wardle & Co., Ltd., Mombasa, B.E. Africa.

Professor A. J. Hale and Mr. E. Wheeler were elected Scrutators, and a ballot for the election of Fellows was held, the following subsequently being declared elected as Fellows :

Alexander Forbes.
Mark Gallagher, B.Sc.
Thomas Leslie Garner, B.Sc.
Herbert John George, M.A., A.I.C.
Mohammed Abdul Hamid, M.Sc.
James Arthur Durham Hickson, B.Sc.
Harold Higham.
Purushottam Das Kapur, B.Sc.
Percival Charles Leggetter, M.C., B.A.
Ludvig Johannes Lindeman.
Louis Ivan Allan Micheli, M.Sc.
Gustaf Jim Ostling, Ph.D.
James William Pardoe, A.K.C.
Madho Prasad, M.Sc.
John Herbert Window Rumsey.
Lee Irvin Smith, M.A., Ph.D.
Ralph Victor Webb.
Rhys Williams.
Ahmad Zaki, B.Sc.

The following papers were read :

"Hydrolysis : and the theory of induced alternate polarities." By D. R. BOYD.

"The isomerism of the oximes. Part XX. The isomeric *p*-nitrobenzophenone oximes and the four methyl ethers derived from them." By O. L. BRADY and R. P. MEHTA.

"The significance of simple rotatory dispersion." By T. M. LOWRY and E. M. RICHARDS.

THE LIBRARY.

The Library will be closed for Stocktaking from Monday, August 4th, until Saturday, August 16th, 1924.

During the four weeks August 18th to September 13th, the Library will close daily at 5 p.m.

List of papers, or Abstracts thereof, received between May 16th and June 19th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"The action of hydrazines on semicarbazones. Part I." By M. M. J. SUTHERLAND and F. J. WILSON.

"Photochemical reactions in circularly polarised, plane polarised, and ordinary light. The velocity of reactions between bromine and (1) cinnamic acid, (2) stilbene." By J. C. GHOSH and R. M. PURKAYASTHA.

"Studies in the configuration of $\alpha\alpha'$-dibromodibasic acids. Part III. The $\alpha\alpha'$-dibromosuccinic acids." By H. R. ING and W. H. PERKIN, jun.

"The bromination of acetylphenylhydrazine : the preparation of 2 : 4-dibromophenylhydrazine." By J. E. HUMPHRIES and R. EVANS.

"Note on a device for maintaining a constant level in a water-bath." By R. BROOKS.

"Studies in the phenylsuccinic acid series. Part VIII. The

resolution of *r*-diphenylsuccinalic and *r*-diphenylsuccino-*p*-toluidic acids into their optical antipodes." By H. WREN and R. E. BURROWS.

"An apparatus for collecting a gas at a constant pressure." By H. J. E. DOBSON.

"The behaviour of titanic acid towards hydrochloric acid." By A. M. MORLEY and J. K. WOOD.

"The fractionator." By W. J. GOODERHAM.

"The density of the oxides of zirconium and hafnium." By G. V. HEVESY and V. BERGLUND.

"A new form of extraction apparatus." By H. H. GOLDTHORPE.

"The hydrolysis of the *p*-toluenesulphonchloroamides in water." By F. G. SOPER.

"Application of the Grignard reaction to some acetylenic compounds. Part II." By F. J. WILSON and W. M. HYSLOP.

"Hydrolysis: and the theory of induced alternate polarities." By D. R. BOYD.

"A method of filling long mercury manometers." By E. SWAN.

"Studies with the microbalance. Part I. The photochemical decomposition of silver bromide." By E. J. HARTUNG.

"Contributions to the chemistry of cadinene. Part I." By G. G. HENDERSON and A. ROBERTSON.

"The explosion of acetylene and nitrogen. Part III. The effect of the addition of oxygen on the production of hydrocyanic acid." By W. E. GARNER and S. W. SAUNDERS.

"Fission of the pyridine nucleus during reduction." By B. D. SHAW.

"The colorimetric dissociation constants of the mono- and di-nitroquinols." By E. B. R. PRIDEAUX and G. R. NUNN.

"The isomerism of the oximes. Part XX. The isomeric *p*-nitrobenzophenone oximes and the four methyl ethers derived from them." By O. L. BRADY and R. P. MEHTA.

"The interaction of acetoacetic ester with *o*-hydroxydistyryl ketones." By I. M. HEILBRON and T. A. FORSTER.

"The chemistry of the glutaconic acids. Part XVI. The tendency towards reversion to type." By C. K. INGOLD, J. H. OLIVER, and J. F. THORPE.

"Elimination of the amino-group of tertiary amino-alcohols. Part II. The semipinacolinic deamination of β-hydroxy-αβ-diphenyl-β-naphthylethylamine." By A. MCKENZIE and W. S. DENNLER.

"Studies in the organic polysulphides. Part III. The action of the disulphides of the alkali metals and of sodium tetrasulphide on some organic halogen compounds." By J. S. THOMAS and R. W. RIDING.

"Tesla-luminescence spectra. Part IV. Some hydrocarbons containing a single benzene nucleus." By W. H. McVicker, J. K. Marsh, and A. W. Stewart.

"The preparation of octadecyl malonic acids, arachidic acid, and some derivatives of long chain aliphatic compounds." By N. K. Adam and J. W. W. Dyer.

"Derivatives of 1 : 8-naphthalic acid. Part I. The preparation and properties of 1 : 8-naphthaloyl chloride." By F. A. Mason.

"Derivatives of 1 : 8-naphthalic acid. Part II. The preparation and properties of 1-benzoylnaphthalene-8-carboxylic acid and its derivatives." By F. A. Mason.

"Studies in the resolution of racemic acids by optically active alcohols. Part III. The resolution of *r*-tartaric and *r*-dimethoxysuccinic acids by *l*-menthol." By H. Wren and K. H. Hughes.

"ψ-Epiberberine." By J. S. Buck and W. H. Perkin, jun.

"ψ-Berberine." By R. D. Haworth, W. H. Perkin, jun., and J. Rankin.

"The volumetric determination of total carbonic acid in dilute solutions of calcium bicarbonate." By E. M. Crowther and W. S. Martin.

"Absorption spectra and molecular phases. Part II." By R. A. Morton and A. McGookin.

"Absorption spectra and molecular phases. Part III." By R. A. Morton.

"The mono-nitration of *p*-chlortoluene." By H. H. Hodgson and P. Anderson.

"On the so-called poisoning of oxidising catalysts." By C. Moureu and C. Dufraisse.

"The properties of ammonium nitrate. Part IX. The reciprocal salt pair ammonium nitrate and lithium chloride." By E. P. Perman and W. R. Harrison.

"Studies on the Walden inversion. Part VIII. The influence of the solvent on the sign of the product in the conversion of β-hydroxy-β-phenylpropionic acids to β-bromo-β-phenylpropionic acids." By G. Senter and A. M. Ward.

"The isomerism of the styryl alkyl ketones. Part I. The isomerism of 2-hydroxystyryl methyl ketone." By A. McGookin and I. M. Heilbron.

"Chloro-perbromide equilibria." By E. A. Dancaster.

"The viscosity and surface tension of solutions of iodine and potassium iodide." By E. A. Dancaster.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

ANDRUSSOV, NIKOLAI IVANOVIČ [and others]. Le karabougaz et son importance industrielle. 2nd edition. Petrograd 1922. pp. 172. ill. [In Russian.]

CRANSTON, JOHN ARNOLD. The structure of matter. London 1924. pp. xvi + 196. ill. 12*s*. 6*d*. net. (*Recd*. 11/6/24.)
From the Publishers : Messrs. Blackie & Son.

HEPWORTH, HARRY. Chemical synthesis : studies in the investigation of natural organic products. London 1924. pp. xx + 244. ill. 20*s*. net. (*Recd*. 28/5/24.)
From the Publishers : Messrs. Blackie & Son.

HOGBEN, LANCELOT T. The pigmentary effector system : a review of the physiology of colour response. Edinburgh 1924. pp. xii + 152. ill. 10*s*. 6*d*. net. (*Recd*. 11/6/24.)
From the Publishers : Messrs. Oliver & Boyd.

PARTINGTON, JAMES RIDDICK, and SHILLING, WILLIAM GEORGE. The specific heats of gases. London 1924. pp. 252. ill. 30*s*. net. (*Recd*. 30/5/24.) From the Publishers : Messrs. Ernest Benn.

ROYAL COLLEGE OF SCIENCE CHEMICAL SOCIETY. Journal. Vol. III : containing the papers read during the session 1923—1924. London 1924. pp. 52. ill. (*Reference*.) From the Society.

ROYAL SOCIETY OF LONDON. Handbook to the exhibition of pure science : British Empire Exhibition, 1924. [London 1924]. pp. 228. ill. (*Reference*.)
From the British Empire Exhibition Committee.

THOMAS, WILLIAM. Complex salts. London 1924. pp. xii + 122. ill. 10*s*. net. (*Recd*. 28/5/24.)
From the Publishers : Messrs. Blackie & Son.

II. *By Purchase.*

BALY, EDWARD CHARLES CYRIL. Spectroscopy. 3rd edition. Vol. I. London 1924. pp. xii + 298. ill. 14*s*. net. (*Recd*. 18/6/24.)

EMICH, FRIEDRICH. Mikrochemisches Praktikum : eine Anleitung zur Ausführung der wichtigsten mikrochemischen Handgriffe, Reaktionen und Bestimmungen mit Ausnahme der quantitativen organischen Mikroanalyse München 1924. pp. xiv + 174. ill. (*Recd*. 11/6/24.)

GEORGIEVICS, GEORG. Lehrbuch der chemischen Technologie der Gespinstfasern. [II.] Gespinstfasern, Wäscherei, Bleicherei, Färberei, Druckerei und Appretur. 4th edition, edited by GEORG GEORGIEVICS and GUSTAV ULRICH. Leipzig 1924. pp. viii + 416. ill. (*Recd*. 11/6/24.)

HABER, FRITZ. Fünf Vorträge aus den Jahren 1920—1923. Berlin 1924. pp. vi + 92. (*Recd.* 11/6/24.)

HAUSBRAND, EUGEN. Drying by means of air and steam: explanations, formulæ and tables for use in practice. 3rd English edition. Translated from the German by A. C. WRIGHT. London 1924. pp. viii + 78. ill. 6*s*. net. (*Recd.* 18/6/24.)

HEUSER, EMIL. Textbook of cellulose chemistry. Translated from the 2nd German edition by CLARENCE JAY WEST and GUSTAVUS J. ESSELEN, Jr. New York 1924. pp. xii + 212. 12*s*. 6*d*. net. (*Recd.* 18/6/24.)

KNIBBS, NORMAN VICTOR SYDNEY. Lime and magnesia: the chemistry, manufacture and uses of the oxides, hydroxides and carbonates of calcium and magnesium. London 1924. pp. 306. ill. 30*s*. net. (*Recd.* 18/6/24.)

LAAR, JOHANNES JACOBUS VAN. Die Zustandsgleichung von Gasen und Flüssigkeiten. Leipzig 1924. pp. x + 368. ill. (*Recd.* 11/6/24.)

LANDER, CECIL HOWARD, and MCKAY, ROBERT FERRIER. Low temperature carbonisation. London 1924. pp. 278. ill. 35*s*. net. (*Recd.* 16/5/24.)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. Journal of Mathematics and Physics. Vol. I, etc. Massachusetts 1921—22. (*Reference.*)

MATHEWS, JOSEPH HOWARD. [Editor.] Colloid symposium monograph: papers and discussions presented at the First National Symposium on Colloid Chemistry. University of Wisconsin, June, 1923. Madison 1923. pp. 420. ill. 18*s*. net. (*Recd.* 13/6/24.)

MATTHEWS, J. MERRITT. The textile fibers: their physical, microscopical and chemical properties. 4th edition. New York 1924. pp. xviii + 1054. ill. 50*s*. net. (*Recd.* 18/6/24.)

MEDICAL RESEARCH COUNCIL. Report on the present state of knowledge of accessory food factors (vitamins). 2nd edition. London 1924. pp. iv + 172. ill. 4*s*. 6*d*. net. (*Recd.* 18/3/24.)

[MEDICAL RESEARCH COUNCIL. *Alcohol Investigation Committee.*] Alcohol: its action on the human organism. 2nd edition. [London 1924.] pp. xx + 170. 1*s*. net. (*Recd.* 20/3/24.)

MENDEL, LAFAYETTE BENEDICT. Nutrition: the chemistry of life. New Haven 1923. pp. xii + 150. ill. 14*s*. net. (*Recd.* 17/4/24.)

MILLS, ADELBERT P. Materials of construction: their manufacture and properties. 2nd edition. Edited by HARRISON W. HAYWARD. New York 1922. pp. x + [480]. ill. 20*s*. net. (*Recd.* 18/3/24.)

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 16th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society through the death of Sir James J. Dobbie on June 19th, and announced that on June 26th the Council had passed the following resolution :

> "On behalf of the Chemical Society the Council desires to express its sense of the great loss the Society has sustained in the death of Sir James Johnston Dobbie, who served as President from 1919–1921 and as Vice-President during a period of five years, and offers to Lady Dobbie and family deep sympathy in their bereavement."

The Fellows present expressed their concurrence in this resolution by rising from their places.

The following deaths also were intimated :

	Elected.	Died.
John Allen	May 5th, 1870.	Aug. 30th.
George H. Allibon	Dec. 6th, 1894.	Mar. 21st, 1923.
Montague K. Bamber	Dec. 4th, 1890.	Sept. 20th.
Sir George Beilby	Dec. 19th, 1872.	Aug. 1st.
Katherine A. Burke	Feb. 16th, 1922.	July 6th.
William Henry Coates	Feb. 3rd, 1887.	Mar. 28th.
Herbert Henry Dains	Feb. 15th, 1894.	Oct. 15th.
Thomas Farrington	Dec. 2nd, 1880.	May 2nd.
Otto Hehner	Nov. 2nd, 1876.	Sept. 9th.
Frederick W. Pittuck	May 4th, 1899.	May 22nd.
Sir Sydney Russell-Wells	Feb. 6th, 1890.	July 14th.
Lionel Gowing-Scopes	Dec. 7th, 1911.	Aug. 16th.
Henry George Smith	Feb. 20th, 1896.	Sept. 19th.
Julius Wertheimer	Mar. 4th, 1886.	Aug. 9th.

The PRESIDENT announced that :

1. The following gifts have been received by the Council :

(*a*) Typescript copy of the Life of J. B. Dumas, presented by his grandson, the author, General J. B. Dumas.

(*b*) Medal of G. Lunge, presented by Professor P. P. Bedson.

(*c*) Donation of £10 10*s*. 0*d*. to the Library from the Research Association of the British Rubber and Tyre Manufacturers.

2. The Council had sealed the following Address which was presented by Professor F. G. Donnan on the occasion of the Centenary Celebrations of the Franklin Institute on September 17th to 19th, 1924 :

" The President, Council and general body of Fellows of the Chemical Society desire to offer to the President, Management, and Members of the Franklin Institute most cordial congratulations on the occasion of the Centenary celebration of the Institute.

" Founded with the object of the promotion of manufactures and of the mechanical and useful arts, the Institute was also to serve as a perpetual remembrance of the great man of whom Washington said, ' If to be venerated for benevolence, if to be admired for talents, if to be esteemed for patriotism, if to be beloved for philanthropy, can gratify the human mind, you must have the pleasing consolation to know that you have not lived in vain.'

" It is not then surprising to find that the activities of the Institute have been as many-sided as those of the man it honours, and the scientific world has learnt to admire the achievements of an Institute which for one hundred years past has contributed so largely to the intelligent promotion of science and its applications, and thus indirectly to the welfare of mankind. The world in general is still unconvinced that ' It is science, not chance, which is every day bringing to light discoveries and inventions which facilitate the labours and enlarge the comforts and power of man.'

" Franklin considered it a duty for every one, in his own sphere of industry, to contribute something, by scientific research, to the sum of existing knowledge. If this ideal has not yet been attained, the labours of the Franklin Institute have at least done much to make it a possibility.

" The Chemical Society recognises the importance of the great work already accomplished by the Institute in this direction, and is confident that its future endeavours will

greatly assist in furthering the belief that in the application of science to human affairs lies the only guarantee of progress.

"Signed on behalf of the Chemical Society,

W. P. WYNNE, *President.*
J. F. THORPE, *Treasurer.*
L.S. T. SLATER PRICE, } *Secretaries.*
C. S. GIBSON, }
ARTHUR W. CROSSLEY, *Foreign Secretary.*

"Sealed in Council this Nineteenth day of June, One Thousand Nine Hundred and Twenty-Four."

3. The Council had sealed the following address which is to be presented by Professor H. E. Armstrong and Professor T. M. Lowry to the Netherland Chemical Society and the Netherland Society of Chemical Industry, Amsterdam, on October 25th, 1924, to commemorate the celebrations of the 50th Anniversary of the foundation of Stereochemistry by van't Hoff and Le Bel in 1874 :

"The President, Council and Fellows of the Chemical Society rejoice to learn that the Netherland Chemical Society and the Netherland Society of Chemical Industry are meeting in Amsterdam to commemorate the 50th anniversary of the foundation of Stereochemistry by Jacobus Henricus van't Hoff and Joseph Achille Le Bel.

"The names of these two savants are indissolubly inscribed on one of the most important milestones indicative of the advances of modern chemical thought and practice, for the masterly conception which they gave to the chemical world has proved a fruitful incentive to brilliant researches, which have not only confirmed their theoretical reasoning, but have also immeasurably widened our knowledge of chemical structure.

"The Chemical Society, which is proud to have both names on its list of Foreign Fellows, welcomes this opportunity of joining with its sister Societies of the Netherlands in doing honour to van't Hoff and Le Bel and in paying its homage to their genius.

"Signed on behalf of the Chemical Society,

W. P. WYNNE, *President.*
J. F. THORPE, *Treasurer.*
L.S. T. SLATER PRICE, } *Secretaries.*
C. S. GIBSON, }
ARTHUR W. CROSSLEY, *Foreign Secretary.*

"Sealed in Council this Sixteenth day of October, One Thousand Nine Hundred and Twenty-Four."

4. The congratulations of the Chemical Society were conveyed by the Treasurer to the Rensselaer Polytechnic Institute, Troy, on the occasion of the Centenary Celebrations on October 3rd and 4th.

5. The following cable had been sent to Sir Prafulla Rây on the formation of the Indian Chemical Society, of which he is the first President:

> "The President and Council of the Chemical Society send hearty congratulations and warm wishes to the newly-formed Indian Chemical Society."

6. On June 19th the Council elected as additional Members of the Publication Committee: Professor H. B. Baker, Professor H. Bassett, Dr. H. W. Dudley, Mr. U. R. Evans, Dr. T. A. Henry, Professor T. M. Lowry, and Professor G. T. Morgan, and at its meeting this afternoon appointed Dr. N. V. Sidgwick as Chairman of the Committee.

7. The Council has appointed as its Representatives on the Bureau of Chemical Abstracts for 1924–1925: Professor C. S. Gibson, Professor G. T. Morgan, Professor J. F. Thorpe and Professor W. P. Wynne.

8. The Council has resolved to remit for a time the payment of the Admission Fee by newly-elected Fellows.

9. In continuance of the arrangement reached last year Members of the Society of Chemical Industry may procure the Abstracts in Pure Chemistry for 1925 for the sum of £1 10*s*., and the Annual Reports for 1924 for the sum of 9*s*., post free; while Fellows of the Chemical Society can obtain "Chemistry and Industry" and Abstracts in Applied Chemistry for 1924 at £1 and £1 10*s*., respectively; or both publications together for £2.

Fellows of the Chemical Society desiring the publications of the Society of Chemical Industry must apply direct to the Secretary of the Society of Chemical Industry.

10. Arrangements have been made by which the Journal of the American Chemical Society, Industrial and Engineering Chemistry, and Chemical Abstracts, published by the American Chemical Society, can be obtained by Fellows at the following reduced rates:

$15·00	plus $2·50	postage for all three	per annum	
$11·50	„ $2·00	„ for any two	„	
$6·25	„ $1·00	„ for any one	„	

while "Chemical Reviews" is offered to Fellows at $4·00 plus 50 cents postage.

Application, accompanied by a remittance, should reach Dr. Charles L. Parsons, Secretary, American Chemical Society, 1709,

G. Street, N.W., Washington, D.C., U.S.A., not later than the 1st December, 1924.

11. A meeting of the Research Fund Committee will be held in December next. Applications for Grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Monday, December 1st, 1924. Applications from Fellows will receive prior consideration.

All persons who received Grants in December, 1923, or in December of any previous year, whose accounts have not been closed by the Council, are reminded that Reports must be returned by December 1st.

Certificates were read for the first time in favour of :

Isidore Elkanah Balaban, 72, Parkhill Road, Hampstead, N.W. 3.
Reginald Furlong Barnes, A.R.C.S., 75, Swinderby Road, Wembley.
Sydney Barratt, B.A., 39, St. Michael's Road, Headingley, Leeds.
Eric Albert Bevan, B.Sc., 90, Wickham Road, Brockley, S.E. 4.
William Norman Bowran, 257, Prince Consort Road, Gateshead-on-Tyne.
Alan Edwin Bradfield, B.Sc., 1, Garth Hill Cottages, Bangor.
George Thomas Byrne, M.Sc., A.I.C., The University, Hong Kong.
Thomas Henry Clare, 41, Maddox Street, Bond Street, W. 1.
Francis Ernest Corringham, 4, Gordon Road, Sevenoaks.
Colin Falconer Flint, B.Sc., A.R.C.S., 41, Priory Road, Hornsey, N. 8.
Walter Brendon Garner, 307/13, Murray Street, Perth, Western Australia.
Herbert Greene, M.C., B.Sc., Ph.D., Gordon College, Khartoum, Sudan.
Harold Ainsworth Harrison, M.Sc., Bobbin Hall, Blackrod, Chorley, Lancs.
Philip William Benson Harrison, B.Sc., 140, Stapleton Hall Road, N. 4.
Thomas Raymond Hodgson, B.Sc., Mown Meadows, Crook, co. Durham.
Joseph Holloway, B.Sc., A.I.C., 39, Elmfield Road, Bromley.
William Plenderleith Lewellen Hope, B.Sc., A.I.C., 6, Cornwall Avenue, Finchley, N. 3.
Charles Ignatius Kelly, M.Sc.Tech., 2, Thomas Street, Carnarvon.
James Craib Lithgow, 23, Lauderdale Avenue, Newlands, Glasgow.
Maung Maung, A.R.C.S., 39, St. Peter's Square, Hammersmith, W. 6.
Stanko Stankov Miholić, Ph.D., 45, Jurjevska, Zagreb, Jugoslavia.
George Morrison Moir, M.Sc., 184, Shetland Street, Wakari, Dunedin, N.Z.
Tatsuo Nakasato, Pharmaceutical Institute, Imperial University, Tokyo, Japan.
Harold Eugene Frederick Notton, B.Sc., A.R.C.S., University Chemical Laboratories, Cambridge.
Sidney Gordon Penn, 182, Monument Road, Edgbaston, Birmingham.
Henry Lorimer Richardson, M.Sc., Imperial College of Science and Technology, South Kensington, S.W. 7.
Tandalam Lakshman Row, 21, Cromwell Road, South Kensington, S.W. 7.
David Alexander Ruffman, 187, Cromwell Road, Earl's Court, S.W. 5.
Nathan Sachs, Merton, Forest Hill, Orangezicht, Cape Town, South Africa.
Sarbbani Sahay Guha Sircar, 21, Cromwell Road, South Kensington, S.W. 7.
Neil Bulloch Stewart, 49, Roslea Drive, Dennistoun, Glasgow.
Roy Brown Strathdee, M.A., B.Sc., Emmanuel College, Cambridge.
Charles Edward Sutcliffe, West House, Agbrigg, Wakefield.
Charles Henry Thomson, 6, Lethington Avenue, Langside, Glasgow.

Percy Alexander Tucker, Braemore, Little Green Lanes, Erdington, Birmingham.
Arthur Eric Jarvis Vickers, B.Sc., 27, Lily Street, Wolstanton, Stoke-on-Trent.
John Harry Village, B.Sc., 61, Broxholme Lane, Doncaster.
Charles William Henry Vivian, B.Sc., A.I.C., 48, Clifford Road, East Finchley, N.2.
Eric Voelcker, 7, Durham Villas, Kensington, W. 8.
William Day Wallace, 25, Grafton Square, Clapham, S.W. 4.
James Roy Gibson Welsh, 46, Minard Road, Partickhill, Glasgow.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Krishna Pillai Padmanabha Pillay, B.A., Cottage Gardens, Kilpauk, Madras
Syed Abdur Razzach, Hyderabad.
Moung Ba San, B.A., 3, Stewart Road, Rangoon.
Moung Tun Tin, B.A., 3, Stewart Road, Rangoon.

The following papers were read:

"The influence of catalysts on carbonisation." By R. Lessing and M. A. L. Banks.

"The photosensitive formation of water from its elements in the presence of chlorine." By R. G. W. Norrish and E. K. Rideal.

"The directive influence of substituents in the glyoxaline nucleus on substitution in the benzene nucleus of phenylglyoxalines—the nitration of 2-phenylglyoxaline and its carboxylic acids." By F. L. Pyman and E. Stanley.

List of papers, or Abstracts thereof, received between June 20th and October 16th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Polarity effects in the isomeric ω-bromoxylenes and isomeric iodotoluenes." By J. B. Shoesmith and R. H. Slater.

"The reactions of alizarin sulphite with carboxylic acids, their anhydrides and chlorides." By A. Green.

"The action of caustic alkali on bromdiethylacetylcarbamide." By G. Newbery.

"Extraction of the isomeric xylenes from crude xylol." By T. S. Patterson, A. McMillan, and R. Somerville.

"Studies in optical superposition. Part VI. The *sec.*-octyl dimethoxy succinates." By T. S. Patterson and C. Buchanan.

"The ionisation constant of hypochlorous acid." By F. G. Soper.

"Some electrochemical aspects of the oxidising properties of sulphur dioxide." By S. R. Carter and F. James.

"Cryoscopic measurements with nitrobenzene. Part II. The variation of the molecular lowering with water content." By F. S. Brown and C. R. Bury.

"The atomic weights of carbon and silver." By G. Dean.

"The colours produced by the action of sulphuric acid upon hydrazones and hydrazides." By F. D. Chattaway, S. J. Ireland, and A. J. Walker.

"The complexity of the solid state. The behaviour of pure sulphur trioxide. Part I." By A. SMITS and P. SCHOENMAKER.

"The detection of methylamine in the presence of excess of ammonia." By P. A. VALTON.

"A new route to the 3-hydroxybenzopyrylium salts." By L. R. RIDGWAY and R. ROBINSON.

"The dissolution of substances in mixed liquids with special reference to colloids." By E. W. J. MARDLES.

"The hydroferrocyanides and hydroferricyanides of the organic bases. Part IV." By W. M. CUMMING.

"The carbonates of ethylene glycol and related compounds." By C. F. ALLPRESS and W. MAW.

"New halogen derivatives of camphor. Part IV. Action of hydroxylamine on α- and α'-chlorocamphor and bromocamphor." By H. BURGESS.

"New halogen derivatives of camphor. Part V. Action of sodium methoxide and ethoxide on $\alpha\beta$-dibromocamphor. Formation of esters of α-bromocampholenic acid." By H. BURGESS.

"The complexity of the solid state. The behaviour of pure phosphorus pentoxide. Part I." By A. SMITS and A. J. RUTGERS.

"The measurement of the vapour pressures of aqueous salt solutions by the freezing point of nitrobenzene." By N. V. SIDGWICK and E. K. EWBANK.

"Rotatory power and residual affinity." By D. H. PEACOCK.

"The solvent action of trialkyl trimethylene triamines on uric acid." By J. GRAYMORE.

"The rotatory dispersion of certain normal alkyl hexahydromandelates." By C. E. WOOD and M. A. COMLEY.

"Studies in electro-endosmosis. Part I." By F. FAIRBROTHER and H. MASTIN.

"Syntheses in the indole series. Part I." By W. O. KERMACK.

"Equilibrium across a parchment membrane in the case of sodium chloride in presence of sodium caseinate." By P. A. SPORING.

"Studies in the anthracene series. Part X." By E. DE B. BARNETT, J. W. COOK, and H. H. GRAINGER.

"Preparation of anilides and esters." By E. DE B. BARNETT and I. G. NIXON.

"Preparation of acid anhydrides." By E. DE B. BARNETT and J. W. COOK.

"Reduction products of arylidene cyanoacetic acids." By W. BAKER and A. LAPWORTH.

"γ-Hydroxystearic acid." By P. W. CLUTTERBUCK.

"Absorption spectra and molecular phases. Part IV." By E. C. C. BALY, R. A. MORTON, and E. ROGERS.

"Absorption spectra and molecular phases. Part V." By E. C. C. BALY, R. A. MORTON, and W. C. V. ROSNEY.

"The interaction between ethyl ethylidenemalonate and anilinophenylacetonitrile." By L. HIGGINBOTHAM, A. LAPWORTH, and C. SIMPSON.

"Ring-chain tautomerism. Part XI. The fluoresceins and rhodamines." By S. DUTT and J. F. THORPE.

"The system sodium carbonate–sodium sulphate–water." By W. A. CASPARI.

"The hydroferrocyanides and hydroferricyanides of the alkaloids." By W. M. CUMMING and D. G. BROWN.

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ANNUAL REPORTS, 1924, VOLUME XXI.

Fellows are reminded that applications for the Annual Reports for 1924 (Vol. XXI) must reach the Assistant Secretary not later than Monday, *December* 1*st*, 1924.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, November 6th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The following were formally admitted Fellows of the Chemical Society :

R. W. Harman, L. Micheli, W. J. U. Woolcock, F. B. Garner, H. Mastin, J. J. Etridge, F. M. Hamer, A. Ollé.

Certificates were read for the first time in favour of :

John Alfred Aeschlimann, B.A., M.Sc., A.I.C., Trinity College, Cambridge.
Reginald George Austin, A.I.C., 23, Exmoor Road, Southampton.
John Barritt, B.Sc., A.R.C.S., A.I.C., St. Andrew's Terrace, Cross Hills, Keighley.
Dorothy Marguerite Bennett, M.Sc., 45, Steade Road, Sheffield.
Henry Booth, B.A., Elmhurst, Aigburth, Liverpool.
Richard Parkinson Bothamley, B.Sc., Fernhurst, Gregory Boulevard, Nottingham.
Alfred Brandt, Thornhill Cottage, Bitterne, Hants.
Charles Edward Browne, B.Sc., Christ's Hospital, Horsham.
Peter George Carter, B.Sc., Chattan House, Abbotsford Crescent, St. Andrews.
William Charlton, B.Sc., 7, Honister Avenue, Jesmond, Newcastle-on-Tyne.
Kenneth Ernest Cooper, Stockeld Park, Wetherby, Yorks.
Reginald Murdin Drake, B.Sc., 12, Spinkfield Road, Birkby, Huddersfield.
Robert Singleton Furness, Mimosa, Weston Park, Thames Ditton.
Richard Gane, Chestwheel Farm, Summerseat, Manchester.
George Euan Gardam, B.Sc., A.R.C.S., 10, Cosbycote Avenue, Herne Hill, S.E. 24.
Richard Frank Goldstein, B.Sc., 92, Dartmouth Road, Cricklewood, N.W. 2.
Herbert Frank Halliwell, 14, Guernsey Grove, Herne Hill, S.E. 24.
Cyril Charles Harris, B.Sc., A.R.C.S., 13, Waverley Grove, Southsea.
John Harvey, B.Sc., 38, Carlton Road, Putney Hill, S.W. 15.
Frederick Hayter, Skin Hospital, Blackfriars Road, S.E. 1.
Harry Holness, The Vineries, Ash, Canterbury.
Margaret Elizabeth John, Sandy, Beds.
Thomas Alfred Jones, B.Sc., School House, East Hoathley, Sussex.
Maud Winifrede Kilroy, B.Sc., Brooklyn Hotel, Earl's Court Square, S.W. 5.
Eric Silvester Kreis, A.R.C.S., 23, Queen's Gate Gardens, S.W. 7.
Subramonia Krishnamurti, B.Sc., 118, Belsize Road, Kilburn, N.W. 6.

Donald Ernest Ladhams, Brook Villa, Shirley Warren, Southampton.
Enid Lakeman, Bedford College, Regent's Park, N.W. 1.
Humphrey Desmond Murray, B.A., 26, Stonor Road, Kensington, W. 14.
Bindiganavale Tirumalachar Narayanan, B.A., 28, Eardley Crescent, Earl's Court, S.W. 5.
Claude Edward Courtenay Nicholls, Yarmouth, Isle-of-Wight.
John Henry Nutland, B.Sc., A.R.C.S., 68, Stonhouse Street, Clapham, S.W. 4.
George Osborn Parrott, 67, Mortlake Road, Kew Gardens.
Stanley Peat, B.Sc., East Hetton Colliery, Coxhoe, Durham.
Hilda Mary Perry, B.Sc., Wolseley, Woodside Park, N. Finchley, N. 12.
Rudolph Albert Peters, M.A., M.D., Department of Biochemistry, Oxford.
Edward William Plowman, 8, Halliford Street, Canonbury, N. 1.
Ronald Herbert Purcell, B.Sc., A.R.C.S., 25, Windmill Street, Gravesend.
Henry George Rees, 21, Park Road, Harlesden, N.W. 10.
Sydney William Ellis Roberts, 4, Sellons Avenue, Harlesden, N.W. 10.
Percy Harry Robinson, M.C., B.Sc., A.I.C., 38, Leyland Road, Lee, S.E. 12.
William Robinson, 18, Chapel Lane, Headingley, Leeds.
Robert Roger, B.Sc., Ph.D., 243, Strathmartine Road, Dundee.
John Ross, B.Sc., A.R.C.S., 29, Warriner Gardens, Battersea, S.W. 11.
Samuel Lamplough Scott, 37, Chatsworth Road, Bournemouth.
Arthur Charles Shill, 8, Judd Road, Tonbridge.
Isobel Agnes Smith, M.A., B.Sc., Ph.D., 2, Seafield Place, Broughty Ferry.
Philip Hugh Payne-Smith, 22, Wallbutton Road, Brockley, S.E. 4.
Roland Wilfred John Smith, B.Sc., London House, High Street, Felixstowe.
Ettie Stewart Steele, M.A., B.Sc., Ph.D., University Hall, St. Andrews.
Frank Sykes, 11, Upper Price Street, York.
Kenneth Vivian Thimann, B.Sc., A.R.C.S., 28, Manor Drive, Wembley Park.
Mitchell Graham Thomson, B.Sc., 63, Manor House Road, Jesmond, Newcastle-on-Tyne.
Gordon Edward Watts, B.A., Belmont, Radcliffe Road, Croydon.
Edgar Winterbottom, B.Sc., Dunheved College, Launceston.

The following papers were read:

"Investigations on the dependence of rotatory power on chemical constitution. Part XXIV. Further experiments on the Walden inversion." By J. KENYON, H. PHILLIPS, and H. G. TURLEY.

"Studies of valency. Part V. The mechanism of the Walden inversion." By T. M. LOWRY.

"A spectroscopic study of the luminescent oxidation of phosphorus." By H. J. EMELÉUS and W. E. DOWNEY.

"The adsorption of catalytically poisonous metals by platinum. Part I. The adsorption of lead and mercury." By E. B. MAXTED.

Ordinary Scientific Meeting, Thursday, November 20th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
Robert Hellon	June 3rd, 1875.	Nov. 9th.
Robert William Murray Thomson	Feb. 16th, 1922.	Nov. 5th.

The PRESIDENT made the following announcements :

1. A meeting of the Faraday Society will be held here on Tuesday, December 9th, at 4.30 p.m., when a group of papers on the " Base Exchange in Soils " will be read, the introductory lecture being given by Dr. D. J. Hissink, of Groningen, Holland. Fellows of the Chemical Society are invited to attend this Meeting and will also be welcomed at an Informal Dinner to be held at the Criterion Restaurant at 8 p.m. The price of the tickets will be 6*s.* 6*d.* (to be paid at the dinner), and those desiring to attend must notify the Secretary of the Faraday Society, 90, Great Russell Street, W.C.1., a few days before the Meeting.

2. Fellows are reminded that application for the Annual Reports for 1924, Volume XXI (price 5*s.* 6*d.*) must be made to the Assistant Secretary. The time by which applications must be received has been extended to Christmas Day, 1924.

3. The Council has decided that each author or joint author shall receive 10 reprints of his paper free of charge, but that such reprints shall be issued without wrapper. If authors desire to receive their reprints in wrappers they should notify the Editor when returning proofs that they are willing to pay the extra cost.

4. The attention of Authors is directed to Regulation No. 2 regarding Scientific Communications submitted to the Society stating that :

> " No paper can be included in the list of Scientific Communications to be brought before a Meeting of the Society unless received by the Secretaries by the Thursday previous to the day of meeting. All papers should be accompanied by a separate *précis*—not exceeding in general 250 words—setting out the broad results of the investigation."

The Council has decided that, in future, no paper can be read at a meeting unless the paper itself is in the hands of the Secretaries.

The Council has also made the following addition to the above Regulation :

> " Every Author is requested to submit typescript in double-line spacing; if this is not possible, the manuscript must be submitted in a form easily legible."

5. The following letter has been received from the President of

the newly-formed Indian Chemical Society, Sir Prafulla Rây, in reply to the Council's telegram of congratulation :

INDIAN CHEMICAL SOCIETY

92, Upper Circular Road,
Calcutta (India).
October 23, 1924.

Dear Prof. Wynne,

I thank you very much for your telegram dated the 17th instant. I need scarcely assure you how highly we value the congratulations and warm wishes of yourself and the Council of the Chem. Soc., which we shall always look upon as the parent Society. The *J.C.S.* has hitherto been the only organ of chemists throughout the British Empire, and the Publication Committee have been hard put to it to find space for the ever-increasing number of communications and have often been under the necessity of appealing to authors of papers to abridge them as far as possible. This will explain the necessity of founding the Indian Chemical Society with an organ of its own.

More than 40 years ago, while a student at Edinburgh, I almost dreamt a dream that, God willing, a time would come when modern India would also be in a position to contribute her quota to the world's stock of scientific knowledge, and it has been my good fortune to see my dream materialised. I have shown in my "History of Hindu Chemistry" that this branch of science was zealously pursued in ancient India and I have now the satisfaction of finding chairs of chemistry in most Universities of India filled by my own pupils, who have also been regular contributors to the *J.C.S.*

It will always be our endeavour to maintain cordial, nay filial relationship with the parent Society, whose inspiration we shall always highly prize. I can scarcely suppress my feelings which arise in me as I am penning these lines. My mind naturally travels back to the memorable Feb. 23, 1841, when the original members met for the purpose of taking into consideration the formation of the London Chemical Society. I have further the gratification to remember that of the original members of the London Chemical Society, I had the good fortune of knowing Lord Playfair (who represented Edinburgh

University for some time), to whom I was introduced by my revered teacher, Crum Brown.

Thanking you once more for your good wishes.

I remain,

Yours very truly.

(*Signed*) P. C. RÂY.

Prof. W. P. WYNNE, D.Sc., F.R.S.,
President, Chemical Society,
Burlington House,
Piccadilly, London.

Certificates were read for the first time in favour of :

Julius Nicholson Ashley, B.Sc., A.I.C., 37, Scarsdale Road, Victoria Park, Manchester.
Vincent Bloomer, B.Sc., 33, Balfour Street, Oldham.
Percy Chorley, M.Sc., 87, Hazelbottom Road, Crumpsall, Manchester.
William Haughton Crowe, Bettwsville, Cherry Valley Park, Belfast.
Harry Julius Emeléus, B.Sc., A.R.C.S., 4, Oakley Crescent, Chelsea, S.W. 3.
Richard Greenhalgh, B.Sc., 139, Stuart Street, Clayton, Manchester.
David Hughes, 18, Holmes Grove, Westbury-on-Trym, Bristol.
Kathleen Harriet Hughes, 8, Ormiston Drive, Knock, Belfast.
Bertram Hobart Ingham, B.Sc., Yew Bank, Langham Road, Bowdon.
Raymond James Wood Le Fevre, 17, Broadway Avenue, St. Margarets.
Frederick William Liley, 41, Beaconsfield Road, West Croydon.
James Gilbert Lunt, B.Sc., c/o Anglo South American Meat Co., San Martin, 235, Buenos Aires.
Vincent Mark Mascarenhas, B.A., Indian Institute of Science, Bangalore.
Thomas Webster Parker, A.R.C.S., Mildenhall, Suffolk.
William Samuel Payne, Moseley House, Rounds Green, Oldbury.
Kenneth John Pierson, 105, Winterbourne Road, Thornton Heath.
Douglas Victor Plumbridge, Ph.D., A.R.C.S., A.I.C., 21, Heathfield Road, Wavertree, Liverpool.
William Joseph Victor Ward, B.A., 41, Marlowe Road, Cambridge.
Alan Douglas Whitehead, B.Sc., 90, West Hill, Putney, S.W. 15.
Victor Emmanuel Yarsley, B.Sc., A.I.C., The View, Highfield, Chasetown, Nr. Walsall.

The following Certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Sadashiva Parashuram Nair, Ph.G., Nair Building, Lamington Road, Bombay.

The following papers were read :

"The sulphur compounds of Kimmeridge shale oil. Part I." By F. CHALLENGER, J. R. A. JINKS, and J. HASLAM.

"The interaction of thiocyanogen and of hydrogen sulphide with unsaturated compounds. Part II." By F. CHALLENGER and T. H. BOTT.

"A new method for the preparation of 9-alkyl carbazoles." By H. BURTON and C. S. GIBSON.

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"The behaviour of the simple halides with water." By N. V. SIDGWICK.

"A synthesis of pyrylium salts of anthocyanodin type. Part V. The synthesis of cyanidin chloride and of delphinidin chloride." By D. D. PRATT and R. ROBINSON.

"Experiments on the synthesis of certain higher aliphatic compounds. Part I. A synthesis of lactarinic acid and of oleic acid." By G. M. ROBINSON and R. ROBINSON.

"A synthesis of myricetin and of galangin monomethyl ether occurring in galanga root." By J. KALFF and R. ROBINSON.

List of papers, or Abstracts thereof, received between October 17th and November 20th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Substituted carbonates derived from para-cresol." By R. H. GRIFFITH.

"Banded bituminous coal. Studies in the composition of coal." By F. V. TIDESWELL and R. V. WHEELER.

"Reactions of thiosemicarbazones. Part III." By F. J. WILSON and R. BURNS.

"New syntheses of arylazoaldoximes." By T. K. WALKER.

"Studies of electrolytic polarisation. Part II. The cathodic overvoltage of mercury." By S. GLASSTONE.

"The molecular weight of cholesterol." By J. R. PARTINGTON.

"The chemistry of lignin. Part II. A comparison of lignins derived from various woods." By W. J. POWELL and H. WHITTAKER.

"The explosion of acetylene and nitrogen. Part IV. Spectra of explosions of gases containing hydrogen, carbon, nitrogen, and oxygen." By W. E. GARNER and S. W. SAUNDERS.

"An *X*-ray investigation of the lower members of the fatty acid series." By R. E. GIBBS.

"The orientation of derivatives of triphenylphosphine oxide and the action of halogens on arylsilicanes and arylbismuthines." By F. CHALLENGER and J. F. WILKINSON.

"2-Methyl- and 2 : 4-dimethyl-quinolino-6 : 5-α-pyrones." By B. B. DEY, I. SARKAR, and T. SESHADRI.

"A comparison between the homogeneous thermal decomposition of nitrous oxide and its heterogeneous catalytic decomposition on the surface of platinum." By C. N. HINSHELWOOD and C. R. PRITCHARD.

"The system zinc sulphate–water." By C. R. Bury.

"The preparation of pure methyl alcohol." By H. B. Hartley and H. R. Raikes.

"The condensation of phenylethylamine with chloromethyl alcohol." By W. F. Short.

"The ignition of gases. Part V. Ignition by inductance sparks. Mixtures of the paraffins with air." By R. V. Wheeler.

"An attempt to separate the isotopes of bromine by fractional crystallisation of ammonium bromide, and a redetermination of the atomic weight of bromine." By P. L. Robinson and H. V. A. Briscoe.

"Chemical affinity and electronic structure. Part II. The polar link." By B. H. Wilsdon.

"Dimethyl- and tetramethyl-butadiene." By A. D. Macallum.

"The addition of malonic ester to anils." By E. J. Wayne and J. B. Cohen.

"The direct combination of ethylenic hydrocarbons with hydrogen sulphites." By I. Kolker and A. Lapworth.

"New synthesis of the meconines." By G. A. Edwards, W. H. Perkin, and F. W. Stoyle.

"Basic slags and rock phosphates." By E. Vanstone.

"The α- and β-naphthalenesulphonylalanines." By W. M. Colles and C. S. Gibson.

"The periodic sphere and the position of the rare earth metals." By J. A. N. Friend.

"The constitution of disulphoxides. Part II." By C. J. Miller and S. Smiles.

"αγ-Dialdehydopropane-ββ-dicarboxylic acid and αγ-dialdehydopropane-β-carboxylic acid." By W. H. Perkin and H. S. Pink.

"The influence of nitrogen dilution on the speed of flame." By O. C. de C. Ellis.

"Reactions of displacement in the tropic acid group. Part I." By A. McKenzie and R. C. Strathern.

"The action of light on the ferrous ferric iodine iodide equilibrium." By E. K. Rideal and E. G. Williams.

"The action of bromine on sodium and silver azides." By D. A. Spencer.

"Researches on residual affinity and co-ordination. Part XXIII. Interactions of trimethylstibine and platinic and palladous chlorides." By G. T. Morgan and V. E. Yarsley.

"Physostigmine (eserine). Part III." By E. Stedman and G. Barger.

"New halogen derivatives of camphor. Part VI. β-Bromo-

camphor-α-sulphonic acid." By H. BURGESS and T. M. LOWRY.

"New halogen derivatives of camphor. Part VII. The constitution of the Reychler series of camphorsulphonic acids. Experiments on chlorosulphoxides." By H. BURGESS and T. M. LOWRY.

"Fission of the pyridine nucleus during reduction. Part II. The preparation of glutaraldehydedioxime." By B. D. SHAW.

"The hydrolytic decomposition of phosphorus trichloride." By A. D. MITCHELL.

"The use of fused borax in the determination of the atomic weight of boron." By H. V. A. BRISCOE, P. L. ROBINSON, and G. E. STEPHENSON.

CERTIFICATES OF CANDIDATES FOR ELECTION AT THE BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, DECEMBER 4TH, 1924.

N.B.—The names of those who sign from "General Knowledge" are printed in *italics*.

AESCHLIMANN, JOHN ALFRED, Trinity College, Cambridge. British. Chemist. Asst. Demonstrator, Univ. Laboratories. Sub-lector of Trinity College. B.A., M.Sc. (Cantab.), B.Sc. (Lond.), A.I.C. Late Senior Scholar of Trinity College. Joint author of papers in *J.C.S.* (*Signed by*) N. P. McCleland, H. R. Stevens, F. G. Mann.

AUSTIN, REGINALD GEORGE, 23, Exmoor Rd., Southampton. English. Student at Battersea Polytechnic. A.I.C. From Oct. 1919 to June 1924 full-time student of chemistry and allied subjects under Professor D. R. Boyd. (*Signed by*) D. R. Boyd, J. Kenyon, J. L. White, Harold Hunter.

BADIA, MOSTAFA, 6, First Avenue, Selly Park, Birmingham. Egyptian. Student of Chemistry; wanting to keep in touch with the progress in chemistry and its literature. (*Signed by*) G. T. Morgan, Wm. Wardlaw, C. E. Wood.

BALABAN, ISIDORE ELKANAH, 72, Parkhill Rd., Hampstead, N.W. 3. British. Research Chemist. Demonstrator, College of Technology, 1920–1921. Research Assistant to Professor of Technological Chemistry, Manchester University, 1921–1924. Publications: Balaban and Pyman, *Trans. Chem. Soc.*, 1922, **121**, 947; Balaban and Pyman, *Trans. Chem. Soc.*, 1924, **125**, 1564. (*Signed by*) Harold King, H. W. Dudley, Frank Lee Pyman.

BARNES, REGINALD FURLONG, 75, Swinderby Road, Wembley. British. Student. Associate of Royal College of Science. (*Signed by*) G. A. R. Kon, M. A. Whiteley, E. H. Farmer.

BARRATT, SYDNEY, 39, St. Michael's Road, Headingley, Leeds. British. Assistant Lecturer in Chemistry, University of Leeds. B.A. (Oxon). (*Signed by*) Alan F. Titley, W. H. Perkin, Fred. A. Mason, N. V. Sidgwick.

BARRITT, JOHN, St. Andrew's Terrace, Crosshills, via Keighley. British. Research Chemist to the British Research Association for the Woollen and Worsted Industries. A.R.C.S., 1923, B.Sc. (Hons.), 1923. Research in Physical Chemistry, 1923–24. A.I.C., 1924. (*Signed by*) Christopher Ingold, Frank R. Goss, James C. Philip.

BATTERSBY, THOMAS CHARLES, 14a, Prospect Road, St. Albans. British. Chemist (St. Albans Gas Coy.). Chemistry of Gas Manufacture, Purification, etc. (*Signed by*) John W. Heath, Percy Edgerton, James H. Gardiner, William T. Burgess.

BENNETT, DOROTHY MARGUERITE, 45, Steade Road, Sheffield. English. Assistant Lecturer in Chemistry, University of Sheffield. M.Sc. (Sheffield). (*Signed by*) W. P. Wynne, Arthur W. Crossley, M. A. Whiteley.

BEVAN, ERIC ALBERT, 90, Wickham Rd., Brockley, S.E. 4. British. Chemist. B.Sc. Assistant to Professor H. E. Armstrong. (*Signed by*) Henry E. Armstrong, E. E. Turner, J. R. Partington.

BOOTH, HENRY, Elmhurst, Aigburth, Liverpool. British. At present learning methods of business with Booth Steamship Co. 1st Class Honours, Chemistry, Oxford, 1924. Part author of a paper published in the *J.C.S.*, 1920. I wish to keep in touch with what is going on in Chemistry while not engaged in scientific work. (*Signed by*) E. J. Bowen, H. R. Raikes, H. Hartley.

BOTHAMLEY, RICHARD PARKINSON, "Fernhurst," Gregory Boulevard, Nottingham. British. Chemist. I have been engaged in the study of Chemistry at University College, Nottingham, for more than ten years. During the war, being unfit for military service, I assisted Prof. F. S. Kipping in chemical work for the Ministry of Munitions for 3½ years. I hold the B.Sc. Hons. Degree (in Chemistry) of London University. (*Signed by*) F. Stanley Kipping, E. B. R. Prideaux, J. B. Firth, F. C. Laxton.

BOWRAN, WILLIAM NORMAN, 257, Prince Consort Road, Gateshead-on-Tyne. British. Chief Chemist and Assistant Works Manager, Messrs. Robt. Bowran & Co., Ltd., 4, St. Nicholas Buildings, Newcastle-on-Tyne. Educated at Northern Polytechnic Institute, Holloway, London, N. Served 5 years' apprenticeship under indentures with Messrs. Wilkinson, Heywood & Clark. Chemistry, Mathematics and Physics at Polytechnic Institute, Regent Street, W. Distinction and 1st Class Certificates in Chemistry. 1st Class Cert. of City and Guilds of London Institute in manufacture of painter's oils, colours, and varnishes. Member of Oil and Colour Chemists' Association. Present occupation includes supervision of paints manufacture, investigations and researches on new products and the general control of analytical work in paints lab. together with analyses of non-ferrous metals and alloys for Foundry Dept. (*Signed by*) J. Newton Friend, Wm. H. Simmons, John Senior.

BRADFIELD, ALAN EDWIN, 1, Garth Hill Cottages, Bangor, N. Wales. British. Research Worker. 1st Class Hons. Degree in Chemistry (B.Sc.), 1922. Oct. 1922–Sept. 1924, Research work with grant, as a "Student in training," from Scientific and Indust. Res. Board. At present engaged on Research, with grant, as a "Research Worker" from the Scientific and Indust. Res. Board. All the above under the supervision of Prof. K. J. P. Orton, F.R.S., at the Univ. College of N. Wales, Bangor. (*Signed by*) Kennedy Orton, F. G. Soper, H. B. Watson, L. Hunter.

BRANDT, ALFRED, Thornhill Cottage, Bitterne, Hants. British. Undergraduate studying Chemistry. Intermediate B.Sc. (Lond.). Passed B.Sc. Physics subsidiary to B.Sc. (Hons.) Chemistry. 3 Years full-time Student

at University College, Southampton. Assistant for 6 months in Chem. Labs. of the Research Laboratories of the General Electric Co. (*Signed by*) D. R. Boyd, William Singleton, Howell Williams.

BRITTON, FRANK WALTER, "Glenroy," 30, Frederick Rd., Wylde Green, Birmingham. English. Electro-chemist. Electrolytic Processes and Metallic Deposition. Former day student at the Municipal Technical School in Chemistry, certificate Junior College of Preceptors, English, Chemistry, Magnetism and Electricity. At present engaged upon a new chemical bronze process for electroplating trade. (*Signed by*) Lionel M. Jones, W. W. Sirman, C. J. V. Bews.

BROWNE, CHARLES EDWARD, Christ's Hospital, Horsham, Sussex. British. Science Master. B.Sc. London (in Chemistry, Physics, and Geology). Senior Science Master, Christ's Hospital, 1899 to present time. Research Student in Chemistry at Central Technical College, 1897–98. Head of Chemistry Dept. of the Robert Gordon College, Aberdeen, 1898–1899, etc. (*Signed by*) James C. Philip, H. B. Baker, T. M. Lowry.

BYRNE, GEORGE THOMAS, 4, University Path, The University, Hongkong. British. Professor of Chemistry, The University, Hongkong. M.Sc. (Vict.), A.I.C. (*Signed by*) Robert H. Pickard, F. C. Ray, H. G. Turley, Harold Hunter.

CARTER, PETER GEORGE, B.Sc. (Sydney), Chatham House, Abbotsford Cres., St. Andrews, Scotland. British. Research student. For one year Demonstrator in Organic Chemistry, Sydney University. Science Research Scholar of Sydney University. Science Research Scholar of the Royal Commissioners for the Exhibition of 1851. Part author of "Researches on Phellandrenes, Part II," published in the Transactions of the Chemical Society, 1924, **125**, 930. (*Signed by*) John Read, J. C. Irvine, G. M'Owan.

CHARLTON, WILLIAM, 7, Honister Avenue, Jesmond, Newcastle-on-Tyne. British. Research Student. B.Sc., 1st Class Honours (Chemistry), Armstrong College, University of Durham. (*Signed by*) W. N. Haworth, G. C. Leitch, C. F. Allpress, W. Maw.

CLARE, THOMAS HENRY, 41, Maddox St., Bond St., W. 1. British. Student of Chemistry at Birkbeck College. (*Signed by*) Samuel Sugden, F. Barrow, F. P. Dunn.

COOPER, KENNETH ERNEST, Stockeld Park, Wetherby, Yorks. English. Student in 4th year, reading for Hons. B.Sc. at Leeds University. (*Signed by*) C. K. Ingold, P. K. Dutt, M. S. Leslie, H. M. Dawson.

CORRINGHAM, FRANCIS ERNEST, 4, Gordon Road, Sevenoaks. British. Pharmacist and Research Chemist. Scientific Chemist to Dr. Bengue & Co., London. Registered Chemist and Druggist. Member of the Pharmaceutical Society of Gt. Britain. Late Demonstrator (Chemistry), London College of Pharmacy. Scientific Adviser on Medical Hydrology, Vittel Spa (France). (*Signed by*) Frank Radcliffe, Thos. R. Owles, S. Gray Fenton.

DRAKE, REGINALD MURDIN, 12, Spinkfield Rd., Birkby, Huddersfield. British. Student at the University, Leeds. B.Sc., now reading for M.Sc. and A.I.C. at the University, Leeds. (*Signed by*) R. Whytlaw Gray, H. M. Dawson, C. K. Ingold, P. K. Dutt, W. Lowson, W. A. Wightman.

FLINT, COLIN FALCONER, 41, Priory Road, Hornsey, N. 8. British. Research Student at Royal College of Science. B.Sc., 1st Class Hons., Lond. to be awarded on completion of session 1924–1925 post-graduate work. A.R.C.S., 1st Class. (*Signed by*) H. B. Baker, M. A. Whiteley, H. F. Harwood.

FRASER, RONALD GEORGE JUTA, 65, Beaconsfield Place, Aberdeen. British. Research Student in Physical Chemistry. B.Sc. (March 1924), University

of Aberdeen, Special Distinction in Natural Philosophy and Chemistry Author, or part author in conjunction with Dr. Thomas and Dr. Humphries, of papers published in the Transactions and Philosophical Magazine. (*Signed by*) Alex. Findlay, T. Harold Reade, J. E. Humphries.

FURNESS, ROBERT SINGLETON, "Mimosa," Weston Park, Thames Ditton. English. Metallurgist, "A.C." Motors, Ltd. London Matriculation, 1st Class. Studied under J. B. Hoblyn, F.I.C. Chemist and Metallurgist to Vauxhall Motors, Luton, Bedfordshire. Metallurgist to Gillett Stephens & Co., Ltd., Bookham, Surrey. Course of instruction Inorganic and Organic Chemistry under Professor Coleman, S.W. Polytechnic, Chelsea. Studied Analytical Chemistry and Metallurgy under Professor Naish, S.W. Polytechnic. (*Signed by*) Frank Radcliffe, Thos. H. Hamnett, Thos. R. Owles.

GANE, RICHARD, Chestwheel Farm, Summerseat, nr. Manchester. English. Student reading for Hons. B.Sc. in Chemistry at Leeds University, final year. (*Signed by*) H. M. Dawson, R. Whytlaw Gray, C. K. Ingold, P. K. Dutt, W. Lowson.

GARDAM, GEORGE EUAN, 10, Cosbycote Avenue, Herne Hill, S.E. 24. British. Student. Research Student at the Royal College of Science. A.R.C.S., 1st Class, B.Sc. (London), 1st Class. (*Signed by*) James C. Philip, H. B. Baker, H. J. T. Ellingham.

GARNER, WALTER BRENDON, 307/13, Murray Street, Perth, Western Australia. Australian. Chemist to Messrs. F. H. Faulding & Co., of Adelaide and Perth, Australia. Desires to keep in touch with current chemical research and literature. (*Signed by*) Ernest J. Parry, Francis Ransom, M. S. Salamon.

GOLDSTEIN, RICHARD FRANK, 92, Dartmouth Rd., Cricklewood, N.W. 2. British. Student. B.Sc. (1st Class Hons. Chemistry), Oct. 1923; since then engaged in research work at University College, London. (*Signed by*) O. L. Brady, J. N. Collie, J. N. E. Day.

GREENE, HERBERT (M.C.), Gezira Research Farm, Wad Medani, Sudan. British. Asst. Govt. Chemist, Sudan (just appointed). B.Sc. St. Andrews, 1921; Maths., Nat. Phil., Chemistry, Special Distinction in the last. Ph.D. St. Andrews, 1924. Carnegie Scholar, 1921–1923. Carnegie Fellow, 1923–1924. Taking up appointment as Assistant Government Chemist, Sudan. Joint publication with Prof. R. Robinson, F.R.S., in *J.C.S.* for 1922. (*Signed by*) Robert Robinson, Jocelyn Thorpe, Robert Robertson.

GRIFFIN, KENNETH MASSY, Auckland, New Zealand. British. Government Analyst, Auckland. M.Sc. (N.Z.). 1st Class Honours in Chemistry. Joint author of paper on "Adsorption and Constitution" about to be submitted for publication. Eight years in Dominion Laboratory, New Zealand. (*Signed by*) J. S. Maclaurin, B. C. Aston, P. W. Robertson, A. H. Bowell.

HALLIWELL, HERBERT FRANK, 14, Guernsey Grove, Herne Hill, London, S.E. 24. British. University Undergraduate. Student in Chemistry at East London College. (*Signed by*) J. R. Partington, E. E. Turner, B. D. Shaw.

HARRIS, CYRIL CHARLES, 13, Waverley Grove, Southsea. British. Student (Research) at Royal College of Science, London. B.Sc. (London), A.R.C.S. (London) (in Chemistry). Student at the R.C.S. since 1921. (*Signed by*) R. W. West, M. B. Donald, H. F. Harwood.

HARRISON, HAROLD AINSWORTH, Bobbin Hall, Blackrod, nr. Chorley, Lancs. British. Research Student. I graduated at Manchester University in 1922 with First Class Honours in Chemistry. M.Sc. in 1923. Have con-

ducted two years' research on the amino- and nitro-naphthoic acids. Am at present a candidate for Ph.D. No published work as yet. (*Signed by*) Arthur Lapworth, Robert Robinson, Ernest Chapman, Wilson Baker.

HARRISON, PHILIP WILLIAM BENSON, 140, Stapleton Hall Rd., N. 4. British. Chemical Research Student at Battersea Polytechnic. B.Sc. (London), 1st Class Honours in Chemistry. (*Signed by*) J. Kenyon, Harold Hunter, Robert H. Pickard.

HARVEY, JOHN, 38, Carlton Rd., Putney Hill, London, S.W. 15. British. Research Chemist. B.Sc. Hons. Chem., Manchester. Employed on research work for two years since taking degree. (*Signed by*) Arthur Lapworth, J. E. Myers, Henry Stephen, Frederick Challenger, Colin Campbell.

HAYTER, FREDERICK, Skin Hospital, Blackfriars Rd., S.E. English. Superintendent Skin Hospital, S.E., Blackfriars. Inorganic Chemistry, Stages 1, 2 and 3. Organic Chemistry, Stages 1 and 2, Theoretical and Practical, S. Kensington Sci. and Art. Demonstrator in Chemistry, Regent St. Polytechnic and Shoreditch Technical Institute under Professor Nunn. (*Signed by*) Frank Radcliffe, Thos. H. Hamnett, Thos. R. Owles.

HEPBURN, IAN, Polwartha Rock, Wadebridge, Cornwall. English. Student at Oxford University. B.A. Oxon. (Chemistry). (*Signed by*) N. V. Sidgwick, D. Ll. Hammick, S. G. P. Plant, E. Hope.

HODGSON, THOMAS RAYMOND, Mown Meadows, Crook, Co. Durham. British. Student. B.Sc. (Dun.), Hons. Chemistry, Class III. (*Signed by*) W. N. Haworth, G. C. Leitch, W. M. Madgin, C. F. Allpress.

HOLLOWAY, JOSEPH, 39, Elmfield Road, Bromley, Kent. British. Chemistry Master in the Bromley County Secondary School for Boys, Bromley, Kent. B.Sc. London. 1st Class Honours in Chemistry. Teacher of Science for 17 years. Associate of Institute of Chemistry (A.I.C.). Research Student at Battersea Polytechnic, London. (*Signed by*) J. Kenyon, J. L. White, A. Houssa, Harold Hunter, Robert H. Pickard.

HOLNESS, HARRY, The Vineries, Ash, Canterbury. British. Honours Student in Chemistry (final year) at the University of Leeds. Have had some experience in research. (*Signed by*) C. K. Ingold, R. Whytlaw Gray, W. Lowson, C. H. Douglas Clark, H. M. Dawson.

HOPE, WILLIAM PLENDERLEITH LEWELLEN, 6, Cornwall Avenue, Finchley, N. 3. British. Analytical Chemist. B.Sc. (Edinburgh), A.I.C. 4 Years' experience of Food and General Analytical work as Assistant to Messrs. Hehner & Cox, 11, Billiter Square, E.C. 3. (*Signed by*) H. E. Cox, E. M. Voelcker, E. R. Bolton.

HUNT, GEORGE EDWARD DRAPER, Bank Cottage, Lower Bradley Street, Wotton-under-Edge, Glos. British. Science Master, Katharine Lady Berkeley's Grammar School, Wotton-under-Edge, Glos. B.Sc. Manchester University. Science Master at Wirksworth Grammar School and Katharine Lady Berkeley's Grammar School since demobilisation in 1920. (*Signed by*) Harold B. Dixon, Arthur Lapworth, Henry Stephen, Colin Campbell, F. P. Burt, J. E. Myers, John Harwood.

JOHN, MARGARET ELIZABETH, Sandy, Bedfordshire. British. Research Student. Teacher of Chemistry. (*Signed by*) J. F. Spencer, H. Crompton, J. Stewart.

JONES, THOMAS ALFRED, School House, East Hoathly, Sussex. British. Student. Having been a full-time student at University College, London, I graduated in Chemistry, taking B.Sc. (London) Honours Chemistry in 1923. (*Signed by*) J. N. Collie, F. G. Donnan, Allan E. Mitchell.

KEAR, IVOR EVANS, "Ingledene," Cinderford, Glos. British. Student.

Chemistry Master, Cinderford Sec. School, Glos., 1918–1920. Bachelor of Science (University of Liverpool) with First Class Honours in School of Chemistry, 1923. (*Signed by*) E. C. C. Baly, W. C. M. Lewis, I. M. Heilbron.

KELLY, CHARLES IGNATIUS, 2, Thomas St., Carnarvon, N. Wales. British. Analytical Chemist, Inspection Department, Anglo-American Oil Co., Ltd., Purfleet, Essex. Free Entrance Scholarship, Carnarvon County School, 1912–1920. Lord Kitchener National Memorial Scholar, 1920–24. B.Sc. Tech., Victoria University, Manchester, Second Division, 1923. M.Sc. Tech., 1924. Thesis on "Formation and Reduction of some Derivatives of *iso*-Quinoline." Laboratory Assistant, Propulsives Dept., H.M. Factory, Pembrey, Carmarthenshire, S. Wales, Aug. 1917 to Dec. 1918. Assistant Demonstrator in Organic and Inorganic Laboratories for Session 1923–24 of Part-time Evening Classes in Technology organised by Manchester Education Committee. (*Signed by*) Frank Lee Pyman, Ernest Vanstone, John K. Wood.

KILROY, MAUD WINIFRED, Brooklyn Hotel, Earl's Court Square. British. Chemical Research. B.Sc. London (Chemistry Hon.). (*Signed by*) G. A. R. Kon, M. A. Whiteley, Arnold Stevenson.

KREIS, ERIC SILVESTER, Toc H., Mark I, 23, Queen's Gate Gdns., S.W. 7. British. Research student at the Royal College of Science. I am an associate of the Royal College of Science and wish to become a fellow of the Society to keep in touch with recent research. (*Signed by*) H. B. Baker, H. F. Harwood, G. A. R. Kon.

KRISHNAMURTI, SUBRAMONIA, Trivandrum, South India (118, Belsize Road, London, N.W. 6). Indian. Research Student. Graduate of the University of Madras (S. India); Research Student in Physical Chemistry in the University College, London, from Dec. 1922. Qualifying for the degree of M.Sc. of the University of London. (*Signed by*) F. G. Donnan, W. E. Garner, Henry Terrey.

LADHAMS, DONALD ERNEST, Brook Villa, Shirley Warren, Southampton. English. Student of Chemistry. Student at the University College, Southampton, for London degree in Hons. Chemistry (Intermediate and Subsidiary subject Exams. passed). Registered Student of Institute of Chemistry. (*Signed by*) D. R. Boyd, G. S. W. Marlow, F. W. Goddard.

LAKEMAN, ENID, Bedford College, Regent's Park, London, N.W. 1. English. Student. Honours Chemistry Student. (*Signed by*) J. F. Spencer, H. Crompton, P. V. McKie, M. S. Crewdson.

LITHGOW, JAMES CRAIB, 23, Lauderdale Ave., Newlands, Glasgow. British. Analytical Chemist. Seven years experience of General Analytical Chemistry in the laboratories of Messrs. R. R. Tatlock & Thomson, City Analysts, Glasgow. Obtained First-class certificates at the Royal Technical College, Glasgow, in the following subjects: Inorganic, Organic, and Physical Chemistry, Fuels, Oils, Dyeing, Metallurgy, Metallography, Paints and Varnishes. (*Signed by*) R. T. Thomson, A. R. Campbell, Geo. Grant.

MAUNG MAUNG, 342, Lower Main Road, Moulmein, Burma. Burmese. Student. Associate of the Royal College of Science. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, James C. Philip.

MIHOLIĆ, STANKO STANKOV, 45, Jurjevska, Zagreb, Jugoslavia. Croatian. Director of the Chemical Department of the State Institute of Epidemiology in Zagreb. Ph.D. (Zagreb) in 1918. 1919–1920 Teacher in the Commercial Academy in Zagreb, since 1920 the head of the Chemical Department of the State Institute of Epidemiology. Engaged in research work in Inorganic Chemistry and Geochemistry. Published several papers in *Rad. Acad.*

Sci. Zagreb. Abstractor for the Journal of the Chemical Society. (*Signed by*) James C. Philip, Henry Terrey, N. V. Sidgwick.

MOIR, GEORGE MORRISON, 184, Shetland St., Wakari, Dunedin, N.Z. Science Teacher, King Edward Technical College, Dunedin. B.Sc. (N.Z.) 1921. Senior Scholar in Chemistry, Univ. of N.Z. M.Sc. (N.Z.) 1922. 1st Class Honours in Chemistry. Part time demonstrator in Chemistry, Otago University, 1917 and 1920. Part time demonstrator in Physics, Otago University, 1921. Part time Assistant to Professor of Chemistry, Otago University, 1922 and 1923. Smeaton Research Scholar in Chemistry, Otago University, 1923. (*Signed by*) J. K. H. Inglis, C. L. Carter, F. H. McDowall, Roy Gardner.

MURRAY, HUMPHREY DESMOND, 26, Stonor Road, Kensington, W. 14. British. Assistant Lecturer and Demonstrator, Imperial College of Science, South Kensington. B.A. (Oxon). Publications in *Phil. Mag.* (*Signed by*) James C. Philip, H. B. Baker, M. A. Whiteley, H. F. Harwood, A. A. Eldridge.

NAKASATO, TATSUO, Pharmaceutical Institute of Tokyo Imperial University. Japanese. Appointed Assistant of the Pharmaceutical Institute of the Tokyo Imperial University. Appointed Assistant of Pharmaceutical Chemistry. (*Signed by*) Robert Robinson, Junzo Shinoda, Shigeru Komatsu.

NARAYANAN, BINDIGANAVALE TIRUMALACHAR, 28, Eardley Crescent, Earl's Court, London. Indian, British protected subject of the Mysore State. Research Student in Chemistry (Organic and interested in Biochemistry) at the Imperial College of Science, South Kensington, London. Bachelor of Arts in Chemistry of the Madras University, 1922. Student at the Indian Institute of Science for a Post-graduate Course, Nov. 1922 to July 1924. (*Signed by*) G. A. R. Kon, M. A. Whiteley, Arnold Stevenson, E. H. Farmer.

NICHOLLS, CLAUDE EDWARD COURTENAY, Yarmouth, Isle of Wight. British. Student. Student in Dept. of Chemistry, University College, Southampton. Student Member of Institute of Chemistry. Intermediate B.Sc. 1923. Subsidiary Geology to B.Sc. Honours in Chemistry, 1923. (*Signed by*) D. R. Boyd, G. S. W. Marlow, F. W. Goddard.

NOTTON, HAROLD EUGENE FREDERICK, University Chem. Laboratories, Cambridge. British. Demonstrator in Organic Chemistry in the University Chemical Laboratories. A.R.C.S., B.Sc. (1st Class Honours, London), 1923. Obtained present position in March, 1924. (*Signed by*) W. J. Pope, R. T. M. Haines, F. G. Mann, L. P. McHatton.

NUTLAND, JOHN HENRY, 68, Stonhouse St., Clapham, London, S.W. 4. British. Research Student at Imperial College; Royal College of Science; Organic Chemistry. A.R.C.S., 1st Class Chemistry, 1924. B.Sc., 2nd Class Hons. Chemistry, 1924. (*Signed by*) M. A. Whiteley, James C. Philip, Philip C. Bull.

PARROTT, GEORGE OSBORN, 67, Mortlake Rd., Kew Gardens, Surrey. British. Chemical Representative and Propagandist amongst the Medical Profession, also a Student worker in Manufacturing and Technical Chemistry. Am anxious to have opportunity to regularly study the J.C.S., and attend the various lectures at Burlington House. (*Signed by*) Archibald Macpherson, Francis W. Hodges, Frank A. Boys.

PEAT, STANLEY, East Hetton Colliery, Coxhoe, Durham. British. Research Student. B.Sc., 1st Class Honours in Chemistry, Armstrong College, University of Durham. (*Signed by*) W. N. Haworth, G. C. Leitch, C. F. Allpress, W. Maw.

PENN, SIDNEY GORDON, Carlos, St. Michael's Rd., Coventry. Consulting

Metallurgist and Technical Representative to an Engineering Firm. Served 5 years apprenticeship to Chemical, Physical, and Metallurgical Profession. Assisted in Researches on Metals. Attended classes in Metallurgy, Metallography, Chemistry, and Physics at Coventry and Birmingham Technical Institutes. Late Chief Assistant Chemist to a motor firm. (*Signed by*) M. A. Shenton, E. Holmes, Cedric A. Vincent Davies.

PERRY, HILDA MARY, Wolseley, Woodside Park, North Finchley, N. 12. British. Student. Hons. B.Sc. Lond. Engaged in Research—Organic Chemistry—with a view to M.Sc. (*Signed by*) O. L. Brady, J. N. Collie, J. N. E. Day.

PETERS, RUDOLPH ALBERT, Department of Biochemistry, Oxford. British. Whitley Professor of Biochemistry, Oxford. Late Dunn Lecturer and Senior Demonstrator in Biochemistry, Cambridge. "The Specific Oxygen Capacity of Hæmoglobin," *J. Physiol.*, 1912, **44**, and other papers relating to Biochemistry and Physiology. M.A., M.D. (Cantab.). (*Signed by*) W. H. Perkin, E. Hope, S. G. P. Plant.

PHILLIPS, HENRY, Ph.D. (Lond.), A.I.C., 80, Brook St., Kennington Rd., S.E. 11. British. Research Assistant to Dr. R. H. Pickard, F.R.S., Battersea Polytechnic, S.W. 11. The candidate is the author of: "Investigations on the Dependence of Rotatory Power on Chemical Constitution, Part XV. and Part XVII," *J.C.S.*, 1923, **123**, 22, 45. (*Signed by*) Robert H. Pickard, J. Kenyon, Harold Hunter.

PLOWMAN, EDWARD WILLIAM, 8, Halliford St., Canonbury, N. 1. British. Student of Chemistry at the Imperial College of Science and Technology (Royal College of Science). (*Signed by*) James C. Philip, H. B. Baker, M. A. Whiteley.

PURCELL, RONALD HERBERT, 25, Windmill St., Gravesend. English, Chemistry Student. 1st Class A.R.C.S. in Chemistry. 1st Class B.Sc. in Chemistry. (*Signed by*) H. B. Baker, James C. Philip, H. F. Harwood.

REES, HENRY GEORGE, 21, Park Road, Harlesden, N.W. 10. British. Student. 3rd Year Student in Chemistry at the Royal College of Science, S. Kensington. Internal Student of the University of London. (*Signed by*) M. A. Whiteley, H. B. Baker, James C. Philip.

RICHARDSON, HENRY LORIMER, c/o Imperial College of Science and Technology, London, S.W. 7. British. Research Student. 4½ Years Student at Victoria University College, N.Z.; 2 Years "Student Assistant"; 2 Years Research; Senior Scholar in Chem.; M.Sc. (N.Z.), 1st Class Honours; Jacob Joseph Scholar; Dominion Science Scholar. (*Signed by*) E. H. Farmer, M. A. Whiteley, G. A. R. Kon, Arnold Stevenson.

ROBERTS, LEN RILEY, National Oil Refineries Ltd., S. Wales. British. Manager's Assistant since 1923. Works Chemist with Blundell, Spence & Co. Ltd., on Colours, Oils, Varnishes, and Petroleum Refining, 4½ years. "Chemist-in-Charge" T.N.T. section H.M. Factory, Queensferry. Also carried out work on T.N.X. "Chemist-in-Charge" H.S. Gas Factory, H.M. Factory, Avonmouth, from initial stages to manufacture being a practical proposition (1916 to 1918). Received Order of British Empire. Chemist at Tampico Refinery, Eagle Oil Co., Mexico. Assistant Works Manager, Tuxpam Refinery, Eagle Oil Co., Mexico, 1918 to 1921. "Control Chemist" National Oil Refineries, S. Wales, 1921–1923. (*Signed by*) Arthur M. O'Brien, Andrew Campbell, R. G. Neilson.

ROBERTS, SYDNEY WILLIAM ELLIS, 4, Sellons Avenue, Harlesden, N.W. 10. British. Works Chemist with The Bristol Celanese Ltd., Willesden. Passed Wales Matric., and Inter B.Sc., standard for A.I.C. Reasons: To have

access to the Society's Library and be kept in touch with modern chemistry through the Journal of the Society. (*Signed by*) Roland J. May, David R. Davey, Percy B. Domone.

ROBINSON, PERCY HARRY, 38, Leyland Road, Lee, S.E. 12. Assistant Master (Secondary School). B.Sc. 1st Class Hons. Chemistry, 1923 (Battersea Poly.). B.Sc. Pass Degree, 1911 (Univ. Coll., London). Teachers' Diploma, 1912 (Lond.). Associate of Institute of Chemistry, 1919. (*Signed by*) J. Kenyon, Harold Hunter, S. Greenberg, F. C. Ray, J. L. White, A. Houssa, D. R. Snellgrove, Francis H. Banfield.

ROBINSON, WILLIAM, 18, Chapel Lane, Headingley, Leeds. English. Technological Chemist in Dyestuffs Industry. Member of the "Society of Dyers and Colourists." Following Matriculation at London, two years at London University, two years at Leeds University in Dye Chemistry. Three years in charge of plant for the large scale manufacture of synthetic "azo" dyestuffs. Some work on "Oleina" Oils and allied materials. (*Signed by*) Frank Radcliffe, Thos. R. Owles, S. Gray Fenton.

ROGER, ROBERT, 243, Strathmartine Rd., Dundee. British. Research Student. B.Sc., Ph.D. (St. Andrews), Carnegie Trust Research Scholar. Part author (with Professor A. McKenzie, F.R.S.) of a paper entitled "Migration of Groups in Derivatives of Benzoin and Desylamine" in the *Journal of the Chemical Society*, 1924, **125**. (*Signed by*) Alex. McKenzie, J. C. Irvine, O. Rhys Howell, David Stiven.

ROSE, THOMAS, 27, Morley Carr, Lowmoor, nr. Bradford. English. Analytical Chemist. Have held positions with two firms as Coke Oven Chemist. Extensive experience of general analysis, particularly organic, and chemical control of works processes, and have lectured publicly on technical subjects. (*Signed by*) H. Russell Pitt, Thomas E. Hull, A. B. Coles.

ROSS, JOHN, 29, Warriner Gardens, Battersea Park, S.W. 11. British. Research Student. B.Sc. (Hons. Chemistry, 1st Class). A.R.C.S. (Chemistry). (*Signed by*) James C. Philip, G. A. R. Kon, E. H. Farmer.

ROW, TANDALAM LAKSHMAN, Agricultural College, Lawley Road P.O., Coimbatore (S. India). Hindu. Assistant Govt. Agricultural Chemist. Student, Imperial College of Science and Technology, London. Assistant Agricultural Chemist, Coimbatore, Madras. (*Signed by*) Jocelyn Thorpe, M. A. Whiteley, James C. Philip.

RUFFMAN, DAVID ALEXANDER, F.R.G.S., 187, Cromwell Road, London, S.W. 5. Russian. Managing Director, Supex Limited. "Ergot: Its Production and Collection in Russia," *The Pharmaceutical Journal*, 29, II, 1908, p. 247, by D. A. Ruffman and Thomas Maben, F.C.S. "Titanotherapia," Journal in the Russian language edited by D. A. Ruffman in St. Petersburg from 1912 to 1914, dealing with the effects of calcium on, and its importance for the human body. Research work carried out by D. A. Ruffman in connection with new method of manufacturing chocolate and treatment of Cacao without alkali; this work and invention sold to British manufacturers, who are now producing Supex chocolate. "Across Siberia by Rail," written by D. A. Ruffman, dealing with questions pertaining to agriculture, gold mining, etc., in Siberia. (*Signed by*) E. Avery Roff, Thos. Tucker, Thomas Maben.

SAINI, MULK RAJ, Hall Bazar, Amritsar, Panjab, India. British subject, Aryan (Hindu). Industrial Surveyor and Additional Inspector of Factories, Department of Industries, Panjab. Passed Master of Science Examination of the Panjab University in Chemistry. Research work on Iodine Value and

Saponification Value of Vegetable Oils and Fats. (*Signed by*) N. A. Yajnik, V. S. Puri, Edwin Theodore Dean.

Scott, Samuel Lamplough, 37, Chatsworth Road, Bournemouth. British. Member of Pharmaceutical Society. Desires to receive the Society's publications and to have use of Library. (*Signed by*) Archibald Macpherson, Ernest Quant, David J. Williams.

Shill, Arthur Charles, 8, Judd Road, Tonbridge, Kent. British. Student. Chemistry Student. Imperial College (Royal Coll. of Science), South Kensington, S.W. 7. (*Signed by*) James C. Philip, H. B. Baker, M. A. Whiteley.

Sircar, Sarbbani Sahay Guha, 21, Cromwell Road, London, S.W. 7. British Indian. Student, candidate for the D.Sc. degree of the London University. Interested in Chemistry, being a candidate for the D.Sc. (London) degree in Chemistry. Submitted a paper "On the Condensation of Resorcinol and a few other Aromatic Hydroxy Compounds with some Acids, Esters, Lactones, and Lactams," to the Chemical Society for publication in the *J.C.S.* Publication held in abeyance in view of further work having been deemed necessary. (*Signed by*) G. A. R. Kon, E. H. Farmer, M. A. Whiteley.

Smith, Isobel Agnes, 2, Seafield Place, Broughty Ferry, Forfarshire. British. Science Student in training. M.A., B.Sc., Ph.D. Carnegie Fellow 1922–23, 1923–24. Joint author of following papers: "Catalytic Racemisation of Optically Active Acid Amides" (*T.*, 1922, **121**, 1348). "The Isomeric *l*-Menthyl Phenylchloroacetates" (*T.*, 1923, **123**, 1962). "Catalytic Racemisation of the Diastereoisomeric *l*-Menthyl Phenylbromoacetates" (*T.*, 1924, **125**, 1582). (*Signed by*) Alex. McKenzie, J. C. Irvine, H. J. Plenderleith, David Stiven, Valerie E. Swainson.

Smith, Philip Hugh Payne-, 22, Wallbutton Rd., Brockley, S.E. 4. British. Student (Research) at the Royal College of Science, and wish to keep in touch with up-to-date developments in Chemistry. (*Signed by*) M. A. Whiteley, G. A. R. Kon, James C. Philip.

Smith, Roland Wilfred John, London House, High St., Felixstowe, Suffolk. British. Research Student, East London College. B.Sc. London, Honours Chemistry. (*Signed by*) E. E. Turner, B. D. Shaw, A. T. Healey, J. R. Partington.

Steele, Ettie Stewart, University Hall, St. Andrews. British. Lecturer in Chemistry, The United College, University of St. Andrews. M.A., B.Sc., Ph.D. (St. Andrews). Author or Joint Author (with Principal Irvine) of original papers published in Transactions as under: (1) *T.*, 1915, **107**, 1221; (2) *ibid.*, p. 1230; (3) *T.*, 1918, **113**, 257; (4) *T.*, 1920, **117**, 1474; (5) 1922, **121**, 1060. (*Signed by*) J. C. Irvine, John Read, G. M'Owan.

Stephens, Oswald Counsell, Temuka, Timaru, New Zealand. Chemist. Master of Science, with First Class Honours in Chemistry. Demonstrator in Chemistry at Otago University in 1921 and 1922. In 1922 read a paper on "The Preparation of Cyanacetic Ester" before the Australasian Association for the Advancement of Science. (*Signed by*) J. K. H. Inglis, C. L. Carter, F. H. McDowall.

Stewart, Neil Bulloch, 49, Roslea Drive, Dennistoun, Glasgow. British. Works Chemist. 3 Years Analytical Chemistry covering many branches of the Chemical Industry, together with Analysis of Food and Drugs and particularly Mineralogical Analysis. All at the County Analysts (Wallace & Clark, Glasgow). 5½ Years in Analysis of Oils, Paints, and Varnishes and many products allied to the trade as well as manufacturing control (J. &

D. Hamilton, Glasgow). (*Signed by*) Douglas A. MacCallum, R. M. Caven, R. M. Clark.

STRATHDEE, ROY BROWN, c/o Farquharson, 17, Albyn Place, Aberdeen (after October) Emmanuel College, Cambridge. British. Research Student. M.A. (Abd.). B.Sc. (1st Hons. Chem.) (Abd.). At present engaged in Research work (Chem.) at Abd. Univ. (*Signed by*) Alex. Findlay, W. Thomas, T. Harold Reade.

SUTCLIFFE, CHARLES EDWARD, West House, Agbrigg, Wakefield. British. A principal in the firm of Edward Sutcliffe, Maltster, Mirfield. Passed London Matriculation (including Chemistry) 1909. Chairman of Yorkshire and North Eastern Section of the Institute of Brewing (2nd year), and a representative on the Research Committee of that Institute. (*Signed by*) O. C. J. G. L. Overbeck, H. Hobson, T. George Shacklady.

SYKES, FRANK, 11, Upper Price Street, York. British. Analytical Works Chemist. Formerly Assistant Chemist: No. F. la (Amatol) National Filling Factory (Munitions), Leeds. Ardol, Ltd., Selby. The Olympia Oil & Cake Company, Ltd., Selby. Now Chemist to H. Leetham & Sons, Ltd., York (and all associated companies) (Flour Millers and Grain Importers). (*Signed by*) James R. Park, George H. Croft, Harry B. Marston.

THIMANN, KENNETH VIVIAN, 28, Manor Drive, Wembley Park, Middlesex. British. Research Student in the Biochemical Dept., Imperial College of Science and Technology. B.Sc. (Hons.) of London University, and A.R.C.S. (*Signed by*) S. B. Schryver, James C. Philip, H. F. Harwood, Harold Mastin.

THOMAS, JOHN OWEN, Compton House, Ton Pentre, Rhondda, Glam. Welsh. Chemist and Druggist. Member of the Pharmaceutical Society of Gt. Britain. Six years study of Pharmaceutical Chemistry. Three years spent at various institutions acquiring the science of Analytical Chemistry. (*Signed by*) C. Morton, F. H. Lowe, J. C. Crocker.

THOMSON, CHARLES HENRY, 6, Lethington Avenue, Langside, Glasgow. British. Analytical and Manufacturing Chemist. 1913–15 Student with R. R. Tatlock & Thomson, Public Analysts, Glasgow. 1913–15 (evening) at Royal Technical College, Glasgow. 1915–18 On active service in France (Chemists' corps). 1918–21 Assistant with R. R. Tatlock & Thomson and student at Royal Technical College. 1921–24 Analytical and Manufacturing Chemist with J. & D. Hamilton, Oil and Paint Manufacturers, Glasgow. (*Signed by*) R. T. Thomson, A. R. Campbell, Geo. Grant.

THOMSON, MITCHELL GRAHAM, 63, Manor House Road, Jesmond, Newcastle-on-Tyne. British. Research Student. B.Sc., 1st Class Honours in Chemistry. (*Signed by*) W. N. Haworth, C. F. Allpress, G. C. Leitch, W. Maw.

TUCKER, PERCY ALEXANDER, "Braemore," Little Green Lanes, Erdington. British. Metallurgical Chemist. Two years on Staff of Metallurgical Dept. at National Physical Lab. Eight years on Chemical Staff of Consol. Gold Fields of S. Africa, Ltd. Eleven years Senior Assistant in charge of laboratory of late Mr. Alexander E. Tucker, who was for 30 years in practice as an Analytical and Consulting Chemist in Birmingham. (*Signed by*) F. W. Harbord, George Tate, Harry Silvester.

TURNER, JOHN PATER, South End Lodge, Newbury. British. Schoolmaster. M.A. (Cantab.), 3rd Class Honours, Natural Science Tripos (Chemistry, Zoology, Biology). Chemistry Master, Newbury Grammar School, 1921 to present time. Chemistry Master, Wolverley School, 1914–1919. (*Signed by*) L. A. Borradaile, C. T. Heycock, A. J. Berry.

VICKERS, ARTHUR ERIC JARVIS, 27, Lily Street, Wolstanton, Stoke-on-

Trent. Chemist (Research). Research Chemist on Refractory Materials under Britith Refractory Research Association. B.Sc. London. Six years industrial experience in Distillation of Coal and in allied industries. (*Signed by*) Leslie S. Theobald, Francis H. Clews, H. V. Thompson.

VIVIAN, CHARLES WILLIAM HENRY, 48, Clifford Rd., E. Finchley, N. 2. British. Senior Demonstrator (Chem. Dept., Northern Polytechnic Institute). B.Sc., A.I.C. Ex part-time Lecturer in Chemistry, Senior Demonstrator (N.P.I.). (*Signed by*) Raymond R. Butler, G. J. Avey, T. J. Drakeley.

VOELCKER, ERIC, 7, Durham Villas, Kensington, W. 8. British. Student of Chemistry at Royal College of Science, South Kensington. (*Signed by*) E. W. Voelcker, H. E. Cox, James C. Philip.

WALLACE, WILLIAM DAY, 25, Grafton Square, Clapham, S.W. British. Chemist. Minor Qualification, Pharmaceutical Society, 1920. Major Qualification, Pharmaceutical Society, 1922. Demonstrator, Heriot-Watt College, Edinburgh. Materia Medica, Pharmacy and Botany, 1922–23. (*Signed by*) Archibald Macpherson, John Macvie Hill, Percy Barrs, Alfred Thomas.

WATTS, GORDON EDWARD, "Belmont," Radcliffe Rd., Croydon. British. Research Student in Chemistry in the University of Cambridge. B.A. (Hons.) Cambridge. Part I, Natural Sciences Tripos, First Class. Part II, Natural Sciences Tripos, First Class. (*Signed by*) W. J. Pope, W. H. Mills, Eric K. Rideal.

WELSH, JAMES ROY GIBSON, Ashburne Lodge, 46, Minard Rd., Partickhill, Glasgow, W. 1. British. Analytical Chemist. I have been, for the past ten years, an analytical chemist in the employment of Messrs. R. R. Tatlock & Thompson, Analytical Chemists, Glasgow. During that period I have had a wide experience in the analysis of all kinds of materials. Educated in the Glasgow High School, and Glasgow Royal Technical College. (*Signed by*) R. T. Thomson, A. R. Campbell, Geo. Grant.

WIGNALL, ERNEST WILLIAM, 9, Tredegar Terrace, Bow, E. 3. British. Junior Hulme Scholar of Brasenose College, Oxford; now taking Part I, and about to engage upon research work for Part II, of the Final Honour School of Natural Science, Chemistry. (*Signed by*) E. Hope, T. W. J. Taylor, S. G. P. Plant, D. Ll. Hammick, G. H. J. Adlam.

WINTERBOTTOM, EDGAR, 247, Leeds Road, Nelson, Lancashire. British. Schoolmaster. Chemistry Master at Dunheved College, Launceston, Cornwall. B.Sc., Second Class Honours, Chemistry, of Manchester University, 1923. In charge of whole of Chemistry at Dunheved College, Launceston, and responsible for one senior student taking Final B.Sc. (London) in 1925; in full charge of chemical laboratory and engaged in private research work for M.Sc. (Manchester). (*Signed by*) Arthur Lapworth, J. E. Myers, Frederick Challenger, Henry Stephen.

The following Certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2).

BEARDALL, HAROLD WILLIAM, P.O. Box 34, Newcastle, Natal, South Africa. British. Cereal Chemist. Diploma in Cereal Chemistry and Analysis awarded by the British School of Milling Chemistry, Grange-over-Sands. Inclusive of Bacteriology, Microscopy, Organic, and Inorganic Chemistry. Two years General Chemistry at the University of the Witwatersrand, Johannesburg. Matriculation (1919). (*Signed by*) Ernest A. W. Shaw, C. Smith.

GILL, WILLIAM GEORGE, Messrs. A. H. Wardle & Co., Ltd., Mombasa,

B.E.A. British. Chemist and Druggist (Pharmaceutical Society of Great Britain, London). To advance my knowledge of, and keep in touch with, Chemistry by means of the publications and, later, by attending lectures of the Chemical Society. (*Signed by*) G. T. R. Francis.

RAZZACK, SYED ABDUR, Hyderabad, Deccan (India). Mohammadan. Pharmaceutical Chemist. I am a prominent Chemist and Druggist of Hyderabad and Manufacturer of almost all the Pharmaceutical Preparations of the British Pharmacopea, and a supplier of medicines to H.E.H. The Nizam's Government, and have compiled a book in Urdu entitled a "Cyclopedia of New Remedies," containing 1400 pages, in which the therapeutic indications of all the latest remedies are given in detail. The Candidate has a keen interest in Chemistry. (*Signed by*) S. Mallannah.

TIN, MOUNG TUN, B.A., 3, Stewart Road, Rangoon, Burma. Burmese. Assistant to the Chemical Examiner to the Government of Burma. Graduate of the Calcutta University (1913–14). Winner of Chemistry Prize (Term 1913–14) in the then Government College, now the Rangoon University College. Sometime Assistant Demonstrator in the College Laboratory. Ten years' experience in the Chemical Examiner's Laboratory comprising examination of Mineral Oils, mixtures of Mineral and Vegetable Oils, also Toxicological and Medico-legal Analysis as well as examination of Tar, Asphalt, Pitch, and Bitumen. (*Signed by*) M. Thein Kin, William Dallas.

ADDITIONS TO THE LIBRARY.

I. *Donations.*

CURTIS, JOHN WILLIAM. Organisation of production. pp. 142. ill. 6*s*. net. (*Recd.* 6/11/24.)
From the Publishers: Messrs. Ernest Benn.

HALL, ARCHIBALD JOHN. Cotton cellulose: its chemistry and technology. London 1924. pp. 228. ill. 30*s*. net. (*Recd.* 6/11/24.) From the Publishers: Messrs. Ernest Benn.

HANDBUCH DER SALVARSANTHERAPIE. Mit Einschluss der experimentellen, biologischen und chemischen Grundlagen. Edited by W. KOLLE and K. ZIELER. Vol. I. Berlin 1924. pp. xiv + 750. ill. (*Recd.* 22/10/24.)
From the Publishers: Herren Urban & Schwarzenberg.

HENRY, THOMAS ANDERSON. The plant alkaloids. 2nd edition. London 1924. pp. viii + 456. ill. 28*s*. net. (*Recd.* 17/10/24.)
From the Publishers: Messrs. J. & A. Churchill.

INSTITUT DE MÉDICINE EXPÉRIMENTALE À PETROGRAD. Archives des Sciences Biologiques. Vol. XXI., etc. Petrograd 1918 + (*Reference.*) [In Russian, summaries in French.]
From the Biochemical Society.

INSTITUTION OF ENGINEERS, AUSTRALIA. The power resources of the Commonwealth of Australia and the Mandated Territory

of New Guinea. Report to the World Power Conference, London, 1924. Sydney 1924. pp. xii + 132. ill. (*Recd.* 22/10/24.)
From the Institution.

INSTITUTION OF PETROLEUM TECHNOLOGISTS. Standard methods of testing petroleum and its products. London 1924. pp. x + 102. ill. 6*s.* net. (*Recd.* 23/10/24.) From the Institution.

LISTER, JOHN EDWARD. The screening and grading of materials. London 1924. pp. 144. ill. 6*s.* net. (*Recd.* 6/11/24.)
From the Publishers: Messrs. Ernest Benn.

PARRISH, PERCY, and SNELLING, F. C. Sulphuric acid concentration. 2 vols. London 1924. pp. 142, 148. ill. 12*s.* net. (*Recd.* 18/11/24.) From the Publishers: Messrs. Ernest Benn.

PARTINGTON, JAMES RIDDICK. Chemical thermodynamics: an introduction to general thermodynamics and its applications to chemistry. London 1924. pp. viii + 276. ill. 10*s.* 6*d.* net. (*Recd.* 15/10/24.) From the Author.

POLLITT, ALAN A. The technology of water. London 1924. pp. 158. 6*s.* net. (*Recd.* 6/11/24.)
From the Publishers: Messrs. Ernest Benn.

READ, JOHN. A short course of practical organic chemistry: qualitative and preparative. St. Andrews [n.d.]. pp. 56. (*Recd.* 14/10/24.) From the Author.

SEYMOUR, HARTLAND. Crushing and grinding machinery. London 1924. pp. 144. ill. 6*s.* net. (*Recd.* 6/11/24.)
From the Publishers: Messrs. Ernest Benn.

SMITH, JOHN DAVID MAIN. Chemistry and atomic structure. London 1924. pp. 222. ill. 12*s.* 6*d.* net. (*Recd.* 1/11/24.)
From the Publishers: Messrs. Ernest Benn.

SPIELMANN, PERCY EDWIN. The constituents of coal tar. London 1924. pp. xii + 220. 12*s.* 6*d.* net. (*Recd.* 22/10/24.)
From the Publishers: Messrs. Longmans, Green & Co.

STEWART, ALAN WEST. A manual of practical chemistry for public health students. 2nd edition. London 1924. pp. xiv + 82. ill. (*Recd.* 14/10/24.) From the Author.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. I. Part ii. Berlin 1924. pp. 321 to 700 + xii. ill. (*Recd.* 22/10/24.)
From the Publishers: Herren Urban & Schwarzenberg.

II. *By Purchase.*

ASTON, FRANCIS WILLIAM. Isotopes. 2nd edition. London 1924. pp. xii + 182. ill. 10*s.* 6*d.* net. (*Recd.* 18/11/24.)

BOGUE, ROBERT HERMAN. (Editor.) The theory and application of colloidal behaviour: contributed by the foremost authorities

in each division of the subject. 2 vols. New York 1924. pp. xii + 444 + xx, viii + 445 to 830 + xx. ill. 40*s.* net. (*Recd.* 27/10/24.)

CROWTHER, JAMES ARNOLD. Ions, electrons, and ionizing radiations. 4th edition. London 1924. pp. xii + 328. ill. 12*s.* 6*d.* net. (*Recd.* 18/11/24.)

FERMENTFORSCHUNG. Edited by EMIL ABDERHALDEN. Vol. VII, etc. Leipzig 1923–24 +. ill. (*Reference.*)

FISCHER, EMIL. Untersuchungen aus verschiedenen Gebieten. Vorträge und Abhandlungen allgemeinen Inhalts. Edited by MAX BERGMANN. Berlin 1924. pp. x + 914. *Gm.* 40.50. (*Recd.* 3/11/24.)

—— Untersuchungen über Triphenylmethanfarbstoffe, Hydrazine und Indole. Edited by MAX BERGMANN. Berlin 1924. pp. x + 880. *Gm.* 39. (*Recd.* 4/11/24.)

FISCHER, FRANZ. Chemie der Kohle. Vol. II. Die Umwandlung der Kohle in Öle. Berlin 1924. pp. viii + 368. ill. *Gm.* 11.70. (*Recd.* 29/10/24.)

HOPKINS, B. SMITH. Chemistry of the rarer elements. Boston 1923. pp. viii + 376. ill. 15*s.* net. (*Recd.* 16/10/24.)

JENNISON, FRANCIS HERBERT. The manufacture of lake pigments from artificial colours. 2nd edition. London 1920. pp. viii + 172. ill. 15*s.* net. (*Recd.* 18/11/24.)

LEWIS, WILLIAM CUDMORE MCCULLAGH. A system of physical chemistry. 3rd edition. Vol. III. Quantum theory. With certain appendices by JAMES RICE, A. M'KEOWN, and ROBERT OWEN GRIFFITH. London 1924. pp. x + 408. ill. 15*s.* net. (*Recd.* 18/11/24.)

LIESEGANG, RAPHAEL ED. Chemische Reaktionen in Gallerten. 2nd edition. Dresden 1924. pp. vi + 90. ill. *Gm.* 3.50. (*Recd.* 4/11/24.)

MEYERHOF, OTTO. Chemical dynamics of life phænomena. Philadelphia 1924. pp. 110. ill. 12*s.* 6*d.* net. (*Recd.* 16/10/24.)

MITCHELL, CHARLES AINSWORTH, and HEPWORTH, T. CRADOCK. Inks: their composition and manufacture. 3rd edition. London 1924. pp. xvi + 336. ill. 12*s.* 6*d.* net. (*Recd.* 16/10/24.)

OPPENHEIMER, CARL. Die Fermente und ihre Wirkungen: nebst einem Sonderkapitel "Physikalische Chemie und Kinetik" von RICHARD KUHN. 5th edition. Part I, etc. Leipzig 1924 +.

PANNELL, JOHN ROBERT. The measurement of fluid velocity and pressure. Edited by R. A. FRAZER. London 1924. pp. viii + 136. ill. 10*s.* 6*d.* net. (*Recd.* 18/11/24.)

RAYLEIGH, FOURTH BARON. ROBERT JOHN STRUTT. John William Strutt, third Baron Rayleigh. London 1924. pp. xii + 404. ill. 25*s.* net. (*Recd.* 18/11/24.)

ROBERTSON, THORBURN BRAILSFORD. Principles of biochemistry: for students of medicine, agriculture and related sciences. 2nd edition. London 1924. pp. xii + 17 to 796. ill. 35*s.* net. (*Recd.* 18/11/24.)

SEARLE, ALFRED BROADHEAD. Refractory materials: their manufacture and uses. 2nd edition. London 1924. pp. xvi + 730. ill. 42*s.* net. (*Recd.* 14/10/24.)

TAMMANN, GUSTAV. Lehrbuch der Metallographic: Chemie und Physik der Metalle und ihrer Legierungen. 3rd edition. Leipzig 1923. pp. xviii + 450. ill. *Gm.* 14.20. (*Recd.* 6/11/24.)

TEESDALE, CLYDE H. [and BEZEAU, C. MORTIMER]. Book I. Modern glues and glue testing. By C. H. TEESDALE. With an appendix: Methods of testing . . . in which is set forth the standards of the Bureau of Aircraft Production. Book II. Glue room equipment and the use of glue. By C. M. BEZEAU. Grand Rapids, Michigan [1922]. pp. 186. ill. 13*s.* 6*d.* net. (*Recd.* 12/11/24.)

UNDERHILL, FRANK PELL. Toxicology or the effects of poisons. Philadelphia 1924. pp. x + 292. 11*s.* 6*d.* net. (*Recd.* 16/10/24.)

WALDEN, PAUL. Optische Umkehrerscheinungen (Waldensche Umkehrung). Braunschweig 1919. pp. 214. (*Recd.* 14/11/24.)

WERNER, ALFRED. Beitrag zur Konstitution anorganischer Verbindungen. Edited by PAUL PFEIFFER. (Ostwald's *Klassiker*, No. 212.) Leipzig 1924. pp. 96. ill. *Gm.* 3.60. (*Recd.* 6/11/24.)

WESSELOW, OWEN LAMBERT VAUGHAN DE. The chemistry of the blood in clinical medicine. London 1924. pp. 256. 15*s.* net. (*Recd.* 18/11/24.)

WOKER, GERTRUD. Die Katalyse. II. Spezieller Teil. Abt. 2. Biologische Katalysatoren. 1. Hydrolysierende Fermente. (Die chemische Analyse. Vol. XXIII/XXIV.) Stuttgart 1924. pp. xvi + 584. (*Reference.*) *Gm.* 22.80.

WOODMAN, ALPHEUS GRANT. Food analysis: typical methods and the interpretation of results. 2nd edition. New York 1924. pp. x + 530. ill. 17*s.* 6*d.* net. (*Recd.* 18/11/24.)

III. *Pamphlets.*

AERONAUTICAL RESEARCH COMMITTEE. Reports and memoranda. No. 906. The measurement of viscosity by means of capillary tubes. By GUY BARR. London 1924. pp. 23. ill.

ARMSTRONG, HENRY EDWARD. James Dewar, 1842—1923: a Friday evening lecture to the Members of the Royal Institution, on January 18, 1924. London 1924. pp. 32. ill.

ASSOCIATION DES ELÈVES ET ANCIENS ELÈVES DE L'ECOLE DE CHIMIE. Inauguration du buste de Philippe-A. Guye. 13 Mars 1924. Genève 1924. pp. 39. ill.

BIRMINGHAM AND MIDLAND INSTITUTE SCIENTIFIC SOCIETY. Record 1872—1922 and Proceedings 1922—1923. Vol. I. [Birmingham 1924.] pp. 38. ill.

BLYTH, CHARLES E., MARTIN, GEOFFREY, and TONGUE, HAROLD. Researches on the theory of fine grinding. Part I. (*British Portland Cement Research Assoc.* Pamphlet No. 4.) London 1924. pp. 62. ill.

BOARD OF TRADE. Carbon monoxide in public gas supplies. Report on accidental deaths by poisoning from public gas supplies. By WILLIAM JOHN ATKINSON BUTTERFIELD. With correspondence arising thereon. London 1924. pp. 48.

FREETH, FRANCIS ARTHUR. Ternaire en quaternaire evenwichten in het stelsel: $NaClO_4$–$(NH_4)_2SO_4$–NH_4ClO_4–Na_2SO_4–H_2O bij 60° en 25° C. Leiden 1924. pp. xii + 53. ill. [In English.]

GOODENOUGH, G. A., and FELBECK, GEORGE T. An investigation of the maximum temperatures and pressures attainable in the combustion of gaseous and liquid fuels. (*Univ. Illinois Engineering Exper. Station*, Bulletin No. 139). Urbana 1924. pp. 160. ill.

HANCOCK, GEORGE CHARLES. Report on the composition of commoner British wines and cordials (alcoholic and non-alcoholic). Together with [a] report by the Government Chemist [Sir JAMES JOHNSTON DOBBIE] on the examination of samples. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 24.) London 1924. pp. iv + 58.

HENDRICK, JAMES. Drainage investigations at Aberdeen. (From the *Scottish J. Agric.*, 1924, **7**.)

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. The progress of chemistry in public affairs. By JOHN THOMAS DUNN. London 1924. pp. 23.

JOINT COMMITTEE FOR THE STANDARDISATION OF SCIENTIFIC GLASSWARE. Report No. 1. Units of volume. pp. 6.

LEU, CHRISTIAN. La viscosité des huiles minérales: (loi des mélanges). (From the *Mon. Pétrole Roumain*, 1923.)

MACALISTER, D. A. Chemical reactions in bromoil. (From the *Q.J. Camera Club*, 1923, **1**.)

MILLER, LEWIS B. On the composition of the precipitate from partially alkalinized alum solutions. (From the *U.S. Public Health Reports*, 1923, **38**.) ill.

MITCHELL, C. W., and DAVENPORT, S. J. Hydrogen sulphide literature. (From the *U.S. Public Health Reports*, 1924, **39**.)

NATIONAL ASSOCIATION OF MASTER BAKERS, CONFECTIONERS & CATERERS. Reports on research at the National Bakery School, London, conducted by CHARLES DORÉE and JOHN KIRKLAND. (From the *Nat. Assoc. Review*, 1924.) ill.

PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, December 4th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT announced:

1. That the following have been appointed to serve as British Representatives on the Editorial Board of the Journal of Physical Chemistry: Professors T. M. Lowry, J. W. McBain, and J. C. Philip by the Chemical Society, and Professor F. G. Donnan by the Faraday Society.

2. That Reprints of Abstracts for 1925, printed on one side of the paper only (the reverse side being gummed or ungummed as desired) suitable for card indexing purposes, can be obtained on application to the Assistant Secretary. The price of the Abstracts is £2 5*s*. 0*d*., and applications must be received on or before January 12th, 1925. Fellows should state when ordering whether they wish to receive the Abstracts gummed or ungummed.

3. That the following letter of congratulation from the Society will be presented by the President on the occasion of the Celebration of the Coming of Age of the University of Leeds and the Jubilee of its parent foundation, the Yorkshire College, to be held at Leeds from December 15th to 20th:

"To The Court, Council and Senate of the
University of Leeds.

"The President, Council and Fellows of the Chemical Society offer their most hearty congratulations on the occasion of the Celebration of the Coming of Age of the University of Leeds and the Jubilee of its parent foundation, the Yorkshire College.

"For fifty years the Chairs of Chemistry have been held by distinguished chemists, Fellows of our Society, who have created a school of chemistry of high reputation, the members of which have greatly extended our knowledge of chemistry by their original investigations.

"As a centre of learning, the University of Leeds occupies a conspicuous place in English education, and we desire to place on record our sincere wishes for its increasing prosperity.

"Signed on behalf of the Chemical Society,
W. P. WYNNE, *President.*
J. F. THORPE, *Treasurer.*
T. SLATER PRICE, C. S. GIBSON, } *Secretaries.*
ARTHUR W. CROSSLEY, *Foreign Secretary.*
"*November 20th*, 1924."

Certificates were read for the first time in favour of :

George Alfred Bartram, B.Sc., A.I.C., 19, Valley Road, Spital, Chesterfield.
George Harry Beeby, B.Sc., A.I.C., 92, Ashby Road, Loughborough.
Arthur Henry Burdick Bishop, Westminster Training College, 130, Horseferry Road, S.W. 1.
Walter Mark Duffin, B.Sc., A.R.C.S., 35, Binfield Road, S.W. 4.
Frederick John Eaton, Ph.D., B.Sc., A.I.C., Gas Light & Coke Co., Horseferry Road, S.W. 1.
Edward Hugh St. Clair Flack, M.Sc., 9, Bridge Street, Cambridge.
Desmond Geoghegan, 13, Port View, Heavitree, Exeter.
Reginald Oswald Gibson, B.Sc., A.I.C., 41, Peak Hill, Sydenham, S.E. 26.
Conrad Theodore Gimingham, F.I.C., Haddon House, Aarenbury Lane, Harpenden.
Jonathan Goodspeed, 36, Vicarage Lane, East Ham, E. 6.
Edward Stanley Hiscocks, B.Sc., 5, Rosehill, Swansea.
Arthur Frederick Hunt, B.Sc., 6, Seabrooke Cottages, Cranham.
Alan Richmond Kennedy, 88, Sellons Avenue, Harlesden, N.W. 10.
Frank Kenyon, A.I.C., Power Station, Greek Mouth, Barking.
Frederick Ernest King, 101, Cavendish Road, Highams Park.
Eric Knott, 21, West Richmond Street, Edinburgh.
Herbert Lambourne, M.A., M.Sc., F.I.C., 44, Brighton Road, S. Croydon.
Alfred Lucy, 16, Chesney Street, Battersea, S.W. 11.
Thomas Mann, Alexander Terrace, Bransty, Whitehaven.
Frederick William Offord, 66, Watford Road, E. 16.
Lionel Edward Outridge, B.Sc., Fernhurst, The Avenue, Chingford.
Stuart Russell Parsons, B.Sc., A.I.C., 65, Oakfield Road, Ilford.
Richard Edwin Pike, B.Sc., 6, Haymarket, S.W. 1.
John Frederick James Rule, B.Sc., 29, Alexandra Road, E. 6.
George Frederick Sheppard, 72, Mortlake Road, Kew Gardens.
Arthur Frederick Smethurst, Nippon, Cedar Road, Sutton.
Ethel Minnie Smewing, B.Sc., 42, Park Avenue South, N. 8.
Suzanne Mabel Lavinia Snelus, A.I.C., 67, Elgin Mansions, W. 9.
Charles James Still, M.Sc., Ph.D., 50, Queen's Parade, Bangor, Co. Down.
Mohammed Hassan Syed, B.Sc., Rupar, Amballa, India.
Eric Spencer Timms, B.Sc., 96, Grange Park Road, Thornton Heath.
Charles Cyril Norrey Vass, B.Sc., Holmleigh, Harboro' Road, Kingsthorpe.
Leslie Thomas Douglas Williams, A.R.C.S., 23, Queen's Gate Gardens, S.W. 7.
John Wilson, M.Sc., 115, Canterbury Road, N. Harrow.

Mr. W. B. Saville and Dr. E. E. Walker were elected Scrutators and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

John Alfred Aeschlimann, B.A., M.Sc., A.I.C.
Reginald George Austin, A.I.C.
Mostafa Badia.
Isidore Elkanah Balaban.
Reginald Furlong Barnes, A.R.C.S.
Sydney Barratt, B.A.
John Barritt, B.Sc., A.R.C.S., A.I.C.
Thomas Charles Battersby.
Harold William Beardall.
Dorothy Marguerite Bennett, M.Sc.
Eric Albert Bevan, B.Sc.
Henry Booth, B.A.
Richard Parkinson Bothamley, B.Sc.
William Norman Bowran.
Alan Edwin Bradfield, B.Sc.
Alfred Brandt.
Frank Walter Britton.
Charles Edward Browne, B.Sc.
George Thomas Byrne, M.Sc., A.I.C.
Peter George Carter, B.Sc.
William Charlton, B.Sc.
Thomas Henry Clare.
Kenneth Ernest Cooper.
Francis Ernest Corringham.
Reginald Murdin Drake, B.Sc.
Colin Falconer Flint, B.Sc., A.R.C.S.
Ronald George Juta Fraser, B.Sc.
Robert Singleton Furness.
Richard Gane.
George Euan Gardam, B.Sc., A.R.C.S.
Walter Brendon Garner.
William George Gill.
Richard Frank Goldstein, B.Sc.
Herbert Greene, M.C., B.Sc., Ph.D.
Kenneth Massy Griffin, M.Sc.
Herbert Frank Halliwell.
Cyril Charles Harris, B.Sc., A.R.C.S.
Harold Ainsworth Harrison, M.Sc.
Philip William Benson Harrison, B.Sc.
John Harvey, B.Sc.
Frederick Hayter.
Ian Hepburn, B.A.
Thomas Raymond Hodgson, B.Sc.
Joseph Holloway, B.Sc., A.I.C.
Harry Holness.
William Plenderleith Lewellen Hope, B.Sc., A.I.C.
George Edward Draper Hunt, B.Sc.
Margaret Elizabeth John.
Thomas Alfred Jones, B.Sc.
Ivor Evans Kear, B.Sc.
Charles Ignatius Kelly, M.Sc.Tech.
Maud Winifred Kilroy, B.Sc.
Eric Silvester Kreis, A.R.C.S.
Subramonia Krishnamurti, B.A.
Donald Ernest Ladhams.
Enid Lakeman.
James Craib Lithgow.
Maung Maung, A.R.C.S.
Stanko Stankov Miholić, Ph.D.
George Morrison Moir, M.Sc.
Humphrey Desmond Murray, B.A.
Tatsuo Nakasato.
Bindiganavale Tirumalachar Narayanan, B.A.
Claude Edward Courtenay Nicholls.
Harold Eugene Frederick Notton, B.Sc., A.R.C.S.
John Henry Nutland, B.Sc., A.R.C.S.
George Osborn Parrott.
Stanley Peat, B.Sc.
Sidney Gordon Penn.
Hilda Mary Perry, B.Sc.
Rudolph Albert Peters, M.A., M.D.
Henry Phillips, Ph.D., A.I.C.
Edward William Plowman.
Ronald Herbert Purcell, B.Sc., A.R.C.S.
Syed Abdur Razzack.
Henry George Rees.
Henry Lorimer Richardson, M.Sc.
Len Riley Roberts, O.B.E.
Sydney William Ellis Roberts.
Percy Harry Robinson, M.C., B.Sc., A.I.C.
William Robinson.
Robert Roger, B.Sc., Ph.D.
Thomas Rose.
John Ross, B.Sc., A.R.C.S.
Tandalam Lakshman Row.
David Alexander Ruffman.
Mulk Raj Saini, M.Sc.
Samuel Lamplough Scott.
Arthur Charles Shill.
Sarbbani Sahay Guha Sircar.
Isobel Agnes Smith, M.A., B.Sc., Ph.D.

Philip Hugh Payne-Smith.
Roland Wilfred John Smith, B.Sc.
Ettie Stewart Steele, M.A., B.Sc., Ph.D.
Oswald Counsell Stephens, M.Sc.
Neil Bulloch Stewart.
Roy Brown Strathdee, M.A., B.Sc.
Charles Edward Sutcliffe.
Frank Sykes.
Kenneth Vivian Thimann, B.Sc., A.R.C.S.
John Owen Thomas.
Charles Henry Thomson.
Mitchell Graham Thomson, B.Sc.
Moung Tun Tin, B.A.
Percy Alexander Tucker.
John Pater Turner, M.A.
Arthur Eric Jarvis Vickers, B.Sc.
Charles William Henry Vivian, B.Sc., A.I.C.
Eric Voelcker.
William Day Wallace.
Gordon Edward Watts, B.A.
James Roy Gibson Welsh.
Ernest William Wignall.
Edgar Winterbottom, B.Sc.

The following papers were read:

"New halogen derivatives of camphor. Part VI. β-Bromocamphor-α-sulphonic acid." By H. BURGESS and T. M. LOWRY.

"New halogen derivatives of camphor. Part VII. The constitution of the Reychler series of camphorsulphonic acids. Experiments on chlorosulphoxides." By H. BURGESS and T. M. LOWRY.

"Some co-ordinated compounds of the alkali metals." By N. V. SIDGWICK and S. G. P. PLANT.

Ordinary Scientific Meeting, Thursday, December 18th, 1924, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows:

	Elected.	Died.
John Marston Collett	June 16th, 1881.	Nov. 25th, 1924.
Thomas Kirkman Dealy	May 2nd, 1907.	Mar. 1st, 1924.

The PRESIDENT announced that

(1) The Harrison Memorial Prize Selection Committee, consisting of the Presidents of The Chemical Society, The Institute of Chemistry, The Society of Chemical Industry, and The Pharmaceutical Society, had unanimously resolved that no award of the Harrison Memorial Prize be made for 1924.

(2) The Council calls attention to the rule that smoking is not allowed on the Library floor.

The following were formally admitted Fellows of the Society:

F. H. McDowall, I. E. Balaban, E. W. Wignall, A. R. Cluer, R. G. Atkinson, H. O. Askew, H. L. Richardson, E. W. Plowman, T. A. Jones, A. C. Shill, R. S. Furness, E. A. Bevan, R. W. J. Smith, E. S. Kreis, P. H. P. Smith, H. G. Rees, J. G. Jackson, H. M. Perry.

Certificates were read for the first time in favour of :

Alexander Steven Corbet, Ph.D., B.Sc., A.I.C., Abbey Stone House, Sidmouth Street, Reading.
Alfred Davidson, B.Sc., 91, Hazelbottom Road, Cheetham, Manchester.
Arthur Hynard Durrant, 47, Cassiobury Road, E. 17.
George Alfred Edwards, B.A., B.Sc., 21, Crystal Palace Road, S.E. 22.
Ralph Margrave Esdaile, The Lytle Coal Co., Ltd., Minerville, Pa., U.S.A.
Clifton William Gibby, B.Sc., A.I.C., Clarendon Laboratory, Oxford.
Anthony James Hailwood, B.Sc., Hazel Bank, Hazel Road, Altrincham.
John Dobney Johnson, B.Sc., 6, Edward Street, Loughborough.
Cecil Brellisford Oakes Jones, Old Sewage Works, Whitley, Coventry.
Alfred James Andrew Lennane, M.R.C.S., L.R.C.P., 22, Ryder Street, St. James's, S.W. 1.
Edward Arthur Nightingale, 39, Pacific Road, Canning Town, E. 16.
John Massey Preston, B.Sc., A.I.C., The Dower House, Euxton, Chorley.
Richard Raper, B.A., 12, Mill Lane, Cambridge.
Leslie Vivian Donald Scorah, B.Sc., A.I.C., 139, Dodworth Road, Barnsley.
Joseph Thomas Shevlin, Corwen, Frederick Road, Wylde Green, Birmingham.
Alton Ewart Clarence Smith, Breydon, Oakmount Avenue, Southampton.
Claude Hyman Spiers, M.A., Ph.D., B.Sc., 34, Brondesbury Road, N.W. 6.
Harold Jacob Stern, Ph.D., B.Sc., 17, Croxteth Grove, Sefton Park, Liverpool.
Mary Beatrice Thomas, Girton College, Cambridge.
Eric Titterington, Abdine Palace, Cairo, Egypt.
Thomas Martin Aikten Tudhope, Ph.D., B.Sc., 8, Anson Road, Tufnell Park, N. 7.
John Henry Wylde, 203, Boleyn Road, Forest Gate, E. 7.

The following papers were read :

"The action of bromine on sodium and silver azides." By D. A. SPENCER.

"A method of determining the presence or absence of complex salts or ions in dilute aqueous solution." By W. H. PATTERSON and J. DUCKETT.

"The nature of the alternating effect in carbon chains. Part I. The directive influence of the nitroso-group in aromatic substitution." By C. K. INGOLD.

"The additive formation of four-membered rings. Part VI. The addition of azo-compounds to ethylenes and some transformations of the dimethylene-1 : 2-di-imine ring." By C. K. INGOLD and S. D. WEAVER.

"The chemistry of the glutaconic acids. Part XVII. Three-carbon tautomerism in the *cyclo*propane series. Part IV." By F. R. GOSS, C. K. INGOLD, and J. F. THORPE.

"The conditions underlying the formation of unsaturated and cyclic compounds from halogenated open-chain derivatives. Part VI. Products derived from halogenated α-methylglutaric acids." By C. K. INGOLD.

LECTURE.

Mr. W. B. HARDY, M.A., Sec.R.S., will deliver his Lecture on "Problems presented by Films on Solid Surfaces" on Thursday, February 26th, 1925, at 8 p.m., in the Lecture Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

List of Papers, or Abstracts thereof, received between November 21st and December 18th, 1924. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

"Side-chain formation in cyclo-paraffins. Part I." By W. A. WIGHTMAN.

"The reduction of the carbocyanines." By F. M. HAMER.

"Hydrolysis of the *d*-glucosides of *d*- and *l*-borneol with emulsin." By S. MITCHELL.

"The electrical explosion of tungsten wires." By H. V. A. BRISCOE, P. L. ROBINSON, and G. E. STEPHENSON.

"The reactivity of antimony haloids with certain aromatic compounds. Part II." By E. VANSTONE.

"The diffusion-potential and transport number of hydrochloric acid in concentrated solution." By S. R. CARTER and F. M. LEA.

"The influence of acid concentration on the oxidation-reduction potential of cuprous and cupric chloride." By S. R. CARTER and F. M. LEA.

"Elemi. The oleo-resin of *Canarium Muelleri*." By T. G. H. JONES and F. B. SMITH.

"Constitutional studies in the monocarboxylic acids derived from sugars. Part III. The isomeric tetramethyl galactonolactones and trimethyl arabonolactones." By J. PRYDE, E. L. HIRST, and R. W. HUMPHREYS.

"Determination of dissolved oxygen." By J. A. N. FRIEND.

"Di-salicylato-borates." By C. R. BURY and W. E. HAMER.

"Conversion of amino-acids into tertiary amino-alcohols." By A. MCKENZIE and G. O. WILLS.

"The synthesis of glycols from atrolactinic acid." By R. ROGER.

"Limits for the propagation of flame in inflammable gas–air mixtures. Part III. The effect of temperature on the limits." By A. G. WHITE.

"The mechanism of Kolbe's electrosynthesis." By R. E. GIBSON.

"The potassium chlororutheniates and the co-ordination number of ruthenium." By S. H. C. BRIGGS.

"The heat of solution and of decomposition of chlorine dioxide." By H. BOOTH and E. J. BOWEN.

"Syntheses of substituted succinic acids containing aromatic residues." By W. BAKER and A. LAPWORTH.

"6-Chlorophenoxarsine." By E. E. TURNER and A. B. SHEPPARD.

"Further experiments on the periodic dissolution of metals." By E. S. HEDGES and J. E. MYERS.

"The reaction between silver and dilute sulphuric acid. The cohesion of the silver powder." By W. HUGHES.

"The adsorption of aqueous sodium hydroxide and of aqueous sulphuric acid by finely-divided silver. The constitution of the adsorbed films and its bearing on the electrode potential." By W. HUGHES.

"The action of light on chlorine dioxide." By H. BOOTH and E. J. BOWEN.

"Synthesis of derivatives of γ-arabinose." By S. BAKER and W. N. HAWORTH.

"The constitution of the normal monosaccharides. Part II. Arabinose." By E. L. HIRST and G. J. ROBERTSON.

"Cryoscopic measurements with nitrobenzene. Part III. Equilibrium in nitrobenzene solution." By F. S. BROWN.

"Studies in electroendosmosis. Part III." By F. FAIRBROTHER and H. MASTIN.

"Asymmetric compounds of pentavalent arsenic." By J. A. AESCHLIMANN.

"Some bromo-derivatives of *m*-hydroxybenzaldehyde." By H. H. HODGSON and H. G. BEARD.

"2-Nitro-*m*-cresol and 2-amino-*m*-cresol." By H. H. HODGSON and H. G. BEARD.

"The nitration of *m*-chlorophenol." By H. H. HODGSON and F. H. MOORE.

"The surface tensions of aqueous phenol solutions. Part I. Saturated solutions." By A. K. GOARD and E. K. RIDEAL.

"The thermal decomposition of nitrogen pentoxide." By H. S. HIRST.

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collars; 1922—1923. (*Ministry of Health Reports on Public Health and Medical Subjects*, No. 27.) London 1924. pp. iv + 31.

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SAYERS, R. R., YANT, W. P., and JONES, G. W. The pyro-tannic acid method for the quantitative determination of carbon monoxide in blood and air. (From the *U.S. Public Health Reports*, 1923, **38**.) ill.

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